cm1000e3u-34nf

cm1000du-34nf

cm1000duc-34nf

в Беларуси Заказ г.Минск +375447584780 Viber telegram whatsapp Skype email 2005646@tut.by

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Электронные компоненты, радиодетали

каталог IGBT модуль cm1000e3u-34nf

cm1000du-34nf

cm1000duc-34nf

где и как купить в Минске?

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cm1000du-34nf,

cm1000duc-34nf,

электронные компоненты, радиодетали купить в Минске

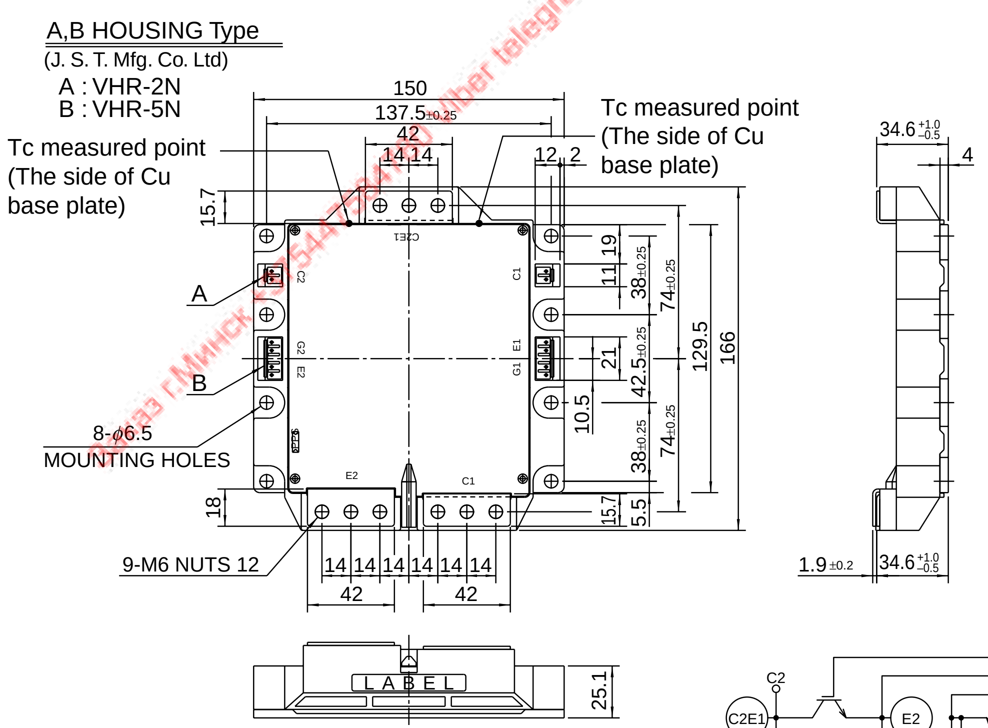
CM1000DU-34NF

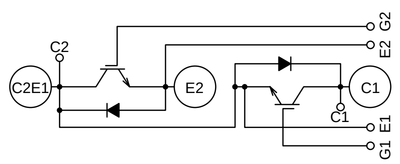
- I_C 1000A
- V_{CES} 1700V
- Insulated Type
- 2-elements in a pack

APPLICATION

General purpose inverters Servo controls, etc

OUTLINE DRAWING & CIRCUIT DIAGRAM Dimensions in mm





CIRCUIT DIAGRAM

MAXIMUM RATINGS (T_j = 25°C)

Symbol	Parameter	Conditions	Ratings	Unit
V_{CES}	Collector-emitter voltage	G-E Short	1700	V
V_{GES}	Gate-emitter voltage	C-E Short	±20	V
I_C	Collector current	T_C' = 104°C	1000	A
I_{CM}		Pulse (Note 2)	2000	
I_E (Note 1)	Emitter current	T_C = 25°C	1000	A
I_{EM} (Note 1)		Pulse (Note 2)	2000	
P_C (Note 3)	Maximum collector dissipation	T_C' = 25°C	8900	W
T_j	Junction temperature		–40 ~ +150	°C
T_{stg}	Storage temperature*3		–40 ~ +125	°C
V_{iso}	Isolation voltage	Main terminal to base plate, AC 1 min.	3500	V
—	Torque strength	Main terminal M6	3.5 ~ 4.5	N • m
		Mounting holes M6	3.5 ~ 4.5	N • m
—	Weight	Typical value	1400	g

ELECTRICAL CHARACTERISTICS (T_j = 25°C)

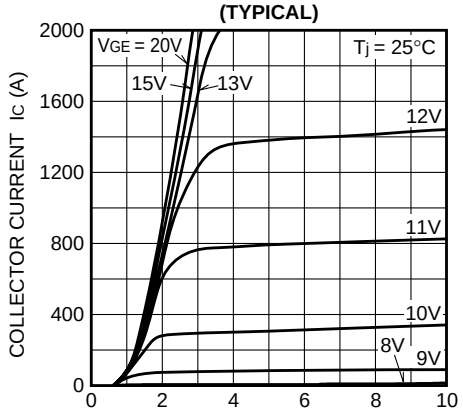
Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
I_{CES}	Collector cutoff current	V_{CE} = V_{CES}, V_{GE} = 0V	—	—	1	mA
$V_{GE(th)}$	Gate-emitter threshold voltage	I_C = 100mA, V_{CE} = 10V	5.5	7	8.5	V
I_{GES}	Gate leakage current	V_{GE} = V_{GES}, V_{CE} = 0V	—	—	5	μA
$V_{CE(sat)}$ (chip)	Collector-emitter saturation voltage (without lead resistance)	T_j = 25°C; I_C = 1000A, V_{GE} = 15V (Note 4)	—	2.2	2.8	V
		T_j = 125°C	—	2.45	—	
$R_{(lead)}$	Module lead resistance	I_C = 1000A, terminal-chip	—	0.286	—	mΩ
C_{ies}	Input capacitance	V_{CE} = 10V, V_{GE} = 0V	—	—	220	nF
C_{oes}	Output capacitance		—	—	25	
C_{res}	Reverse transfer capacitance		—	—	4.7	
Q_G	Total gate charge	V_{CC} = 1000V, I_C = 1000A, V_{GE} = 15V	—	6000	—	nC
$t_{d(on)}$	Turn-on delay time	V_{CC} = 1000V, I_C = 1000A, V_{GE1} = V_{GE2} = 15V, R_G = 0.47Ω, Inductive load switching operation, I_E = 1000A	—	—	600	ns
t_r	Turn-on rise time		—	—	150	
$t_{d(off)}$	Turn-off delay time		—	—	900	
t_f	Turn-off fall time		—	—	200	
t_{rr} (Note 1)	Reverse recovery time		—	—	450	ns
Q_{rr} (Note 1)	Reverse recovery charge		—	90	—	μC
V_{EC}(Note 1) (chip)	Emitter-collector voltage (without lead resistance)	I_E = 1000A, V_{GE} = 0V	—	2.3	3	V
$R_{th(j-c')Q}$	Thermal resistance*1	IGBT part (1/2 module)	—	—	0.014	°C/W
$R_{th(j-c')R}$		FWDi part (1/2 module)	—	—	0.023	
$R_{th(c-f)}$	Contact thermal resistance*2	Case to fin, Thermal compound applied (1/2 module)	—	0.016	—	
R_G	External gate resistance		0.47	—	4.7	Ω

Note 1. I_E, V_{EC}, t_{rr} & Q_{rr} represent characteristics of the anti-parallel, emitter to collector free-wheel diode (FWDi).
2. Pulse width and repetition rate should be such that the device junction temp. (T_j) dose not exceed T_{jmax} rating.
3. Junction temperature (T_j) should not increase beyond 150°C.
4. Pulse width and repetition rate should be such as to cause neglible temperature rise.

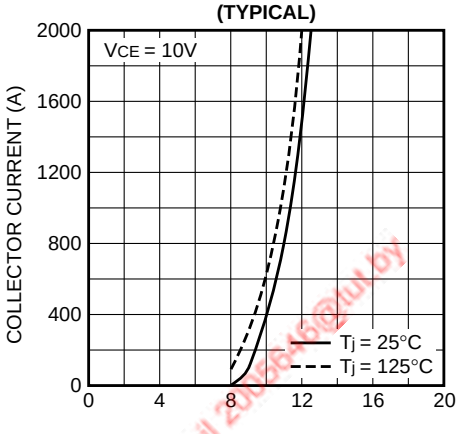
*1 : Tc measured point is just under the chips.
If you use this value, $R_{th(f-a)}$ should be measured just under the chips.
*2 : Typical value is measured by using Shin-etsu Silicone "G-746".
*3 : The operation temperature is restrained by the permission temperature of female connector.

PERFORMANCE CURVES

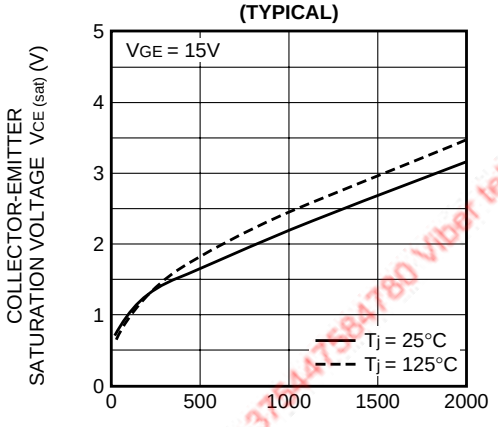
OUTPUT CHARACTERISTICS (TYPICAL)



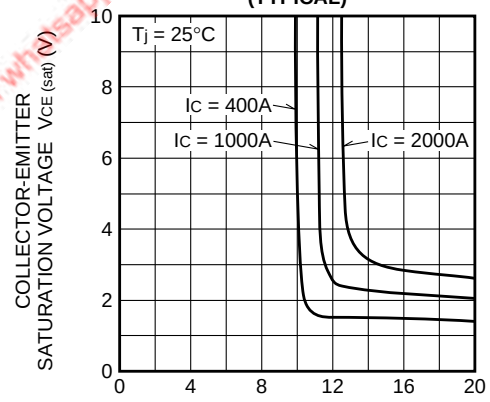
TRANSFER CHARACTERISTICS (TYPICAL)



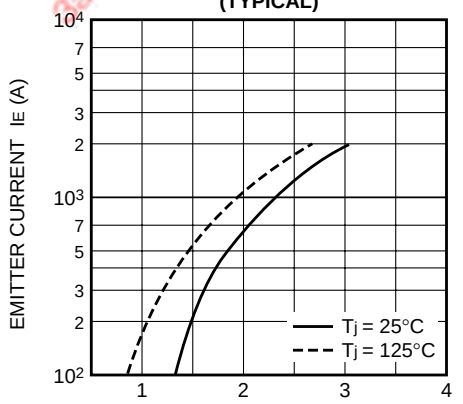
COLLECTOR-EMITTER SATURATION VOLTAGE CHARACTERISTICS (TYPICAL)



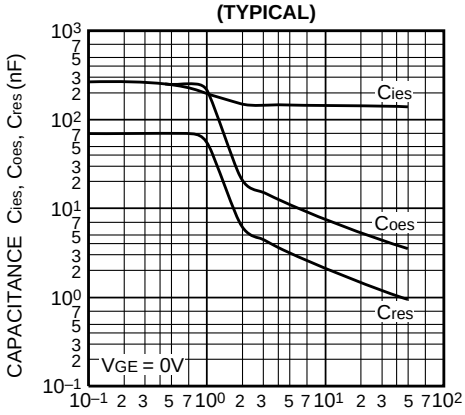
COLLECTOR-EMITTER SATURATION VOLTAGE CHARACTERISTICS (TYPICAL)



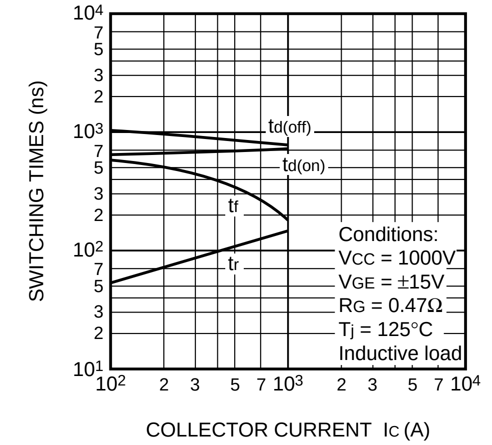
FREE-WHEEL DIODE FORWARD CHARACTERISTICS (TYPICAL)



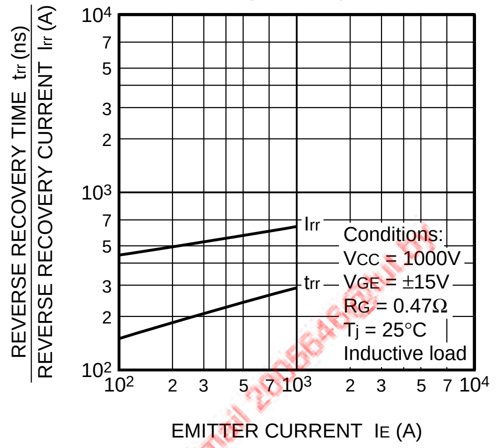
CAPACITANCE–VCE CHARACTERISTICS (TYPICAL)



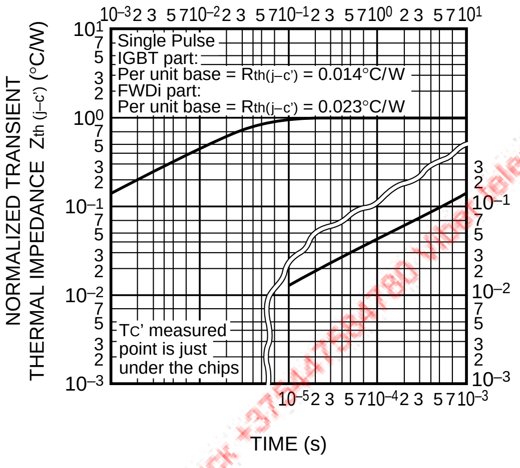
HALF-BRIDGE SWITCHING CHARACTERISTICS (TYPICAL)



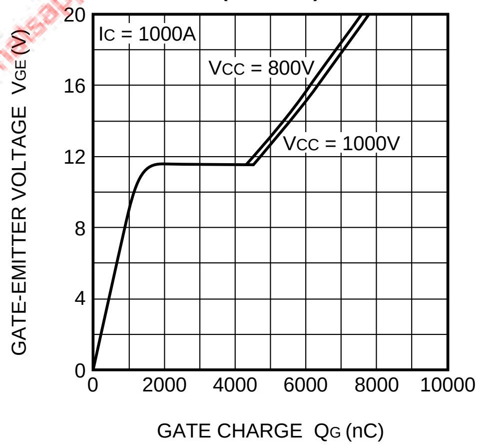
REVERSE RECOVERY CHARACTERISTICS OF FREE-WHEEL DIODE (TYPICAL)



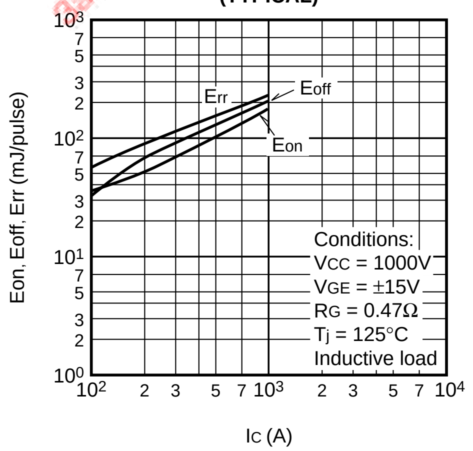
TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (IGBT part & FWDi part)



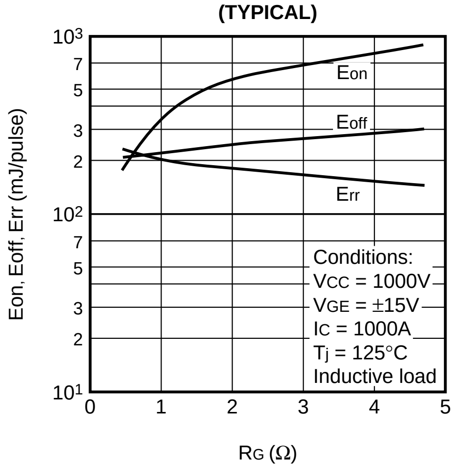
GATE CHARGE CHARACTERISTICS (TYPICAL)



IC-ESW (TYPICAL)



RG-ESW (TYPICAL)



MITSUBISHI ELECTRIC

< IGBT MODULES >

CM1000DUC-34NF

HIGH POWER SWITCHING USE
INSULATED TYPE

Dual switch (Half-Bridge)

Collector current I_C ..... **1000** A
Collector-emitter voltage V_{CES} ..... **1700** V
Maximum junction temperature T_{jmax} ..... **150** °C

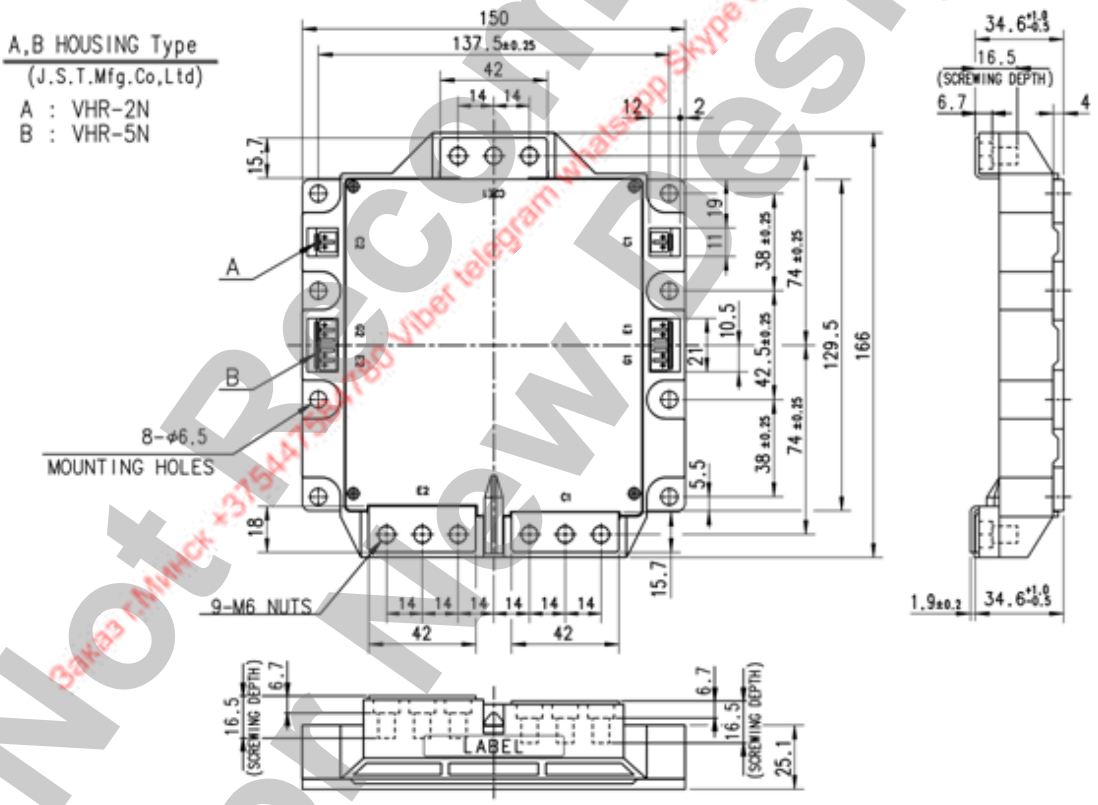
- Flat base Type
- Copper base plate (non-plating)
- RoHS Directive compliant
- Recognized under UL1557, File E323585

APPLICATION

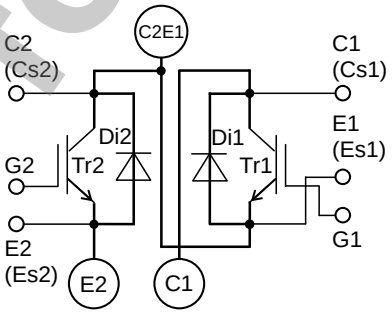
Wind power, Photovoltaic (Solar) power, AC Motor Control, Motion/Servo Control, Power supply, etc.

OUTLINE DRAWING & INTERNAL CONNECTION

Dimension in mm



INTERNAL CONNECTION



Tolerance otherwise specified

Division of Dimension		Tolerance
0.5	to 3	±0.2
over 3	to 6	±0.3
over 6	to 30	±0.5
over 30	to 120	±0.8
over 120	to 400	±1.2

CM1000DUC-34NF

HIGH POWER SWITCHING USE
INSULATED TYPE

MAXIMUM RATINGS (T_j=25 °C, unless otherwise specified)

Symbol	Item	Conditions	Rating	Unit
V_{CES}	Collector-emitter voltage	G-E short-circuited	1700	V
V_{GES}	Gate-emitter voltage	C-E short-circuited	± 20	V
I_C	Collector current	DC, T_C=104 °C (Note2, 4)	1000	A
I_{CRM}		Pulse, Repetitive (Note3)	2000	
P_{tot}	Total power dissipation	T_C=25 °C (Note2, 4)	8925	W
I_E (Note1)	Emitter current	DC (Note2)	1000	A
I_{ERM} (Note1)		Pulse, Repetitive (Note3)	2000	
V_{isol}	Isolation voltage	Terminals to base plate, RMS, f=60 Hz, AC 1 min	3500	V
T_j	Junction temperature	-	-40 ~ +150	°C
T_{stg}	Storage temperature	(Note7)	-40 ~ +125	

ELECTRICAL CHARACTERISTICS (T_j=25 °C, unless otherwise specified)

Symbol	Item	Conditions		Limits			Unit
				Min.	Typ.	Max.	
I_{CES}	Collector-emitter cut-off current	$V_{CE}=V_{CES}$, G-E short-circuited		-	-	1.0	mA
I_{GES}	Gate-emitter leakage current	$V_{GE}=V_{GES}$, C-E short-circuited		-	-	5.0	µA
$V_{GE(th)}$	Gate-emitter threshold voltage	I_C=100 mA, V_{CE}=10 V		6	7	8	V
V_{CEsat}	Collector-emitter saturation voltage	I_C=1000 A, V_{GE}=15 V (Note5) Refer to the figure of test circuit	T_j=25 °C	-	2.20	2.85	V
			T_j=125 °C	-	2.45	-	
C_{ies}	Input capacitance	V_{CE}=10 V, G-E short-circuited		-	-	220	nF
C_{oes}	Output capacitance			-	-	25	
C_{res}	Reverse transfer capacitance			-	-	4.7	
Q_G	Gate charge	V_{CC}=1000 V, I_C=1000 A, V_{GE}=15 V		-	6000	-	nC
$t_{d(on)}$	Turn-on delay time	V_{CC}=1000 V, I_C=1000 A, V_{GE}=±15 V, R_G=0.47 Ω, Inductive load		-	-	600	ns
t_r	Rise time			-	-	200	
$t_{d(off)}$	Turn-off delay time			-	-	1000	
t_f	Fall time			-	-	300	
V_{EC} (Note1)	Emitter-collector voltage	I_E=1000 A, G-E short-circuited, Refer to the figure of test circuit (Note5)	T_j=25 °C	-	2.3	3.0	V
			T_j=125 °C	-	1.95	-	
t_{rr} (Note1)	Reverse recovery time	V_{CC}=1000 V, I_E=1000 A, V_{GE}=±15 V, R_G=0.47 Ω, Inductive load		-	-	500	ns
Q_{rr} (Note1)	Reverse recovery charge			-	90	-	µC
E_{on}	Turn-on switching energy per pulse	V_{CC}=1000 V, I_C=I_E=1000 A, V_{GE}=±15 V, R_G=0.47 Ω, T_j=125 °C, Inductive load		-	272.4	-	mJ
E_{off}	Turn-off switching energy per pulse			-	250.2	-	
E_{rr} (Note1)	Reverse recovery energy per pulse			-	172.4	-	mJ
$R_{CC'+EE'}$	Internal lead resistance	Main terminals-chip, per switch, T_C=25 °C (Note4)		-	0.286	-	mΩ
r_g	Internal gate resistance	Per switch		-	0.67	-	Ω

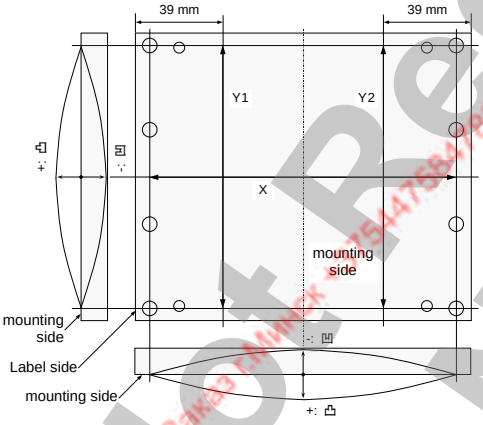
THERMAL RESISTANCE CHARACTERISTICS

Symbol	Item	Conditions	Limits			Unit
			Min.	Typ.	Max.	
$R_{th(j-c)Q}$	Thermal resistance	Junction to case, per IGBT (Note4)	-	-	14	K/kW
$R_{th(j-c)D}$		Junction to case, per DIODE (Note4)	-	-	23	K/kW
$R_{th(c-s)}$	Contact thermal resistance	Case to heat sink, per 1/2 module, Thermal grease applied (Note4, 6)	-	12	-	K/kW

MECHANICAL CHARACTERISTICS

Symbol	Item	Conditions	Limits			Unit
			Min.	Typ.	Max.	
M_t	Mounting torque	Main terminals M 6 screw	3.5	4.0	4.5	N·m
M_s		Mounting to heat sink M 6 screw	3.5	4.0	4.5	N·m
d_s	Creepage distance	Terminal to terminal	24	-	-	mm
		Terminal to base plate	33	-	-	
d_a	Clearance	Terminal to terminal	14	-	-	mm
		Terminal to base plate	33	-	-	
m	mass	-	-	1450	-	g
e_c	Flatness of base plate	On the centerline X, Y1, Y2 (Note8)	-50	-	+100	μm

Note1. Represent ratings and characteristics of the anti-parallel, emitter-collector free wheeling diode (DIODE).
2. Junction temperature (T_j) should not increase beyond T_{jmax} rating.
3. Pulse width and repetition rate should be such that the device junction temperature (T_j) dose not exceed T_{jmax} rating.
4. Case temperature (T_C) and heat sink temperature (T_s) are defined on the each surface (mounting side) of base plate and heat sink just under the chips. Refer to the figure of chip location.
The heat sink thermal resistance should measure just under the chips.
5. Pulse width and repetition rate should be such as to cause negligible temperature rise. Refer to the figure of test circuit.
6. Typical value is measured by using thermally conductive grease of λ=0.9 W/(m·K).
7: The operation temperature is restrained by the permission temperature of female connector housing.
8. Base plate (mounting side) flatness measurement points (X, Y1 and Y2) are as follows of the following figure.



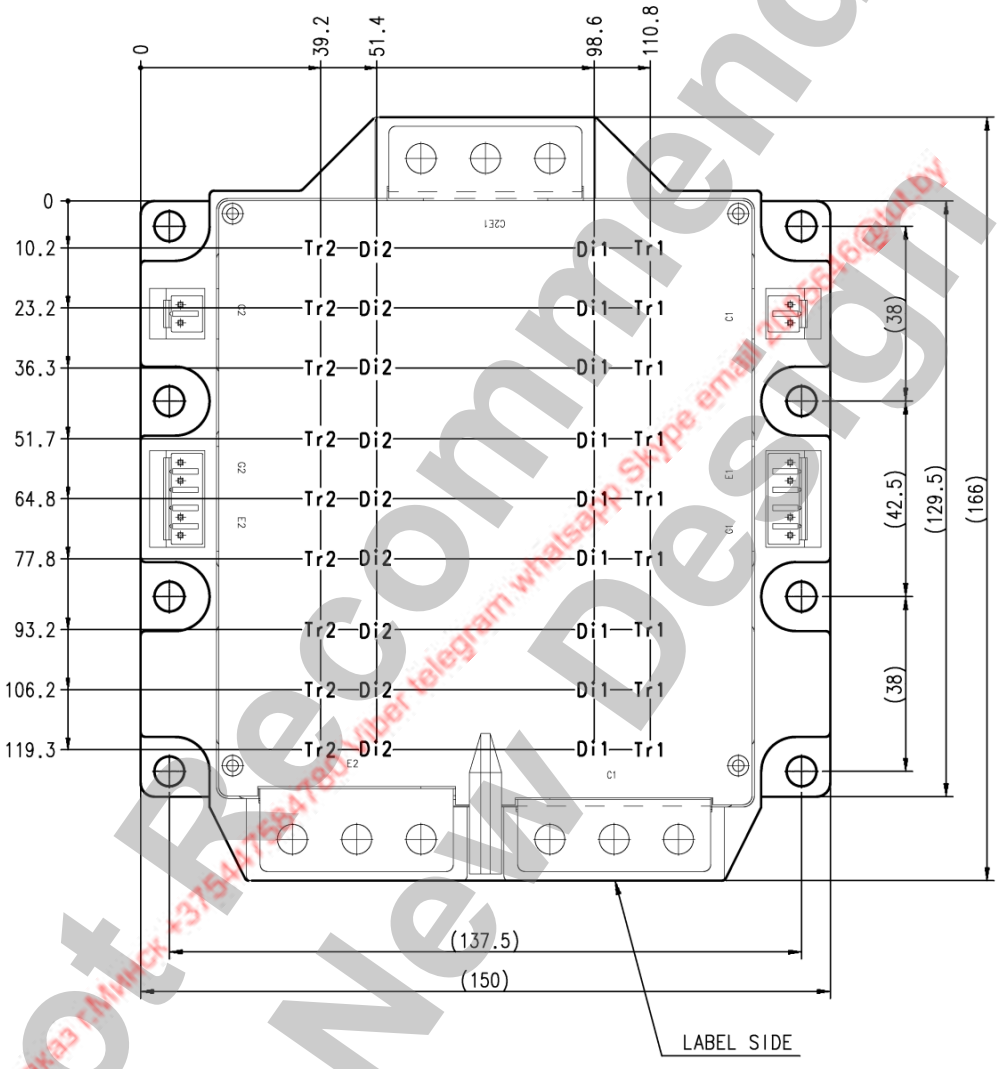
9. The company name and product names herein are the trademarks and registered trademarks of the respective companies.

RECOMMENDED OPERATING CONDITIONS

Symbol	Item	Conditions	Limits			Unit
			Min.	Typ.	Max.	
V_{CC}	(DC) Supply voltage	Applied across C1-E2	-	1000	1100	V
V_{GEon}	Gate (-emitter drive) voltage	Applied across G1-Es1/G2-Es2	13.5	15.0	16.5	V
R_G	External gate resistance	Per switch	0.47	-	4.7	Ω

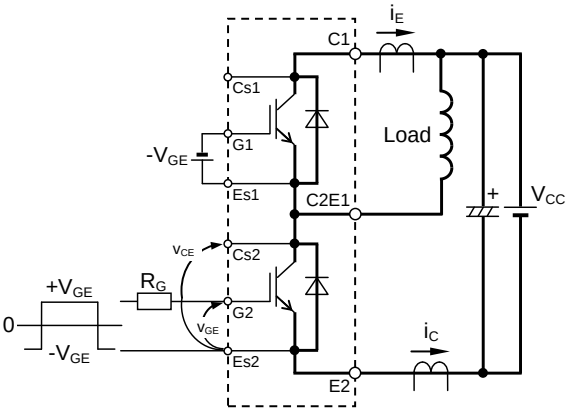
CHIP LOCATION (Top view)

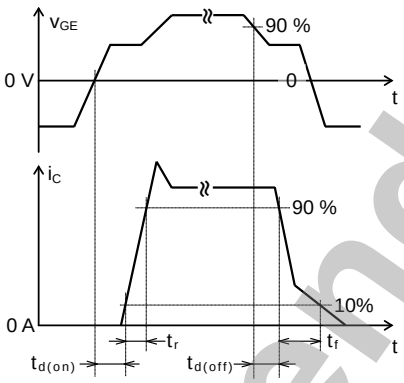
Dimension in mm, tolerance: ±1 mm

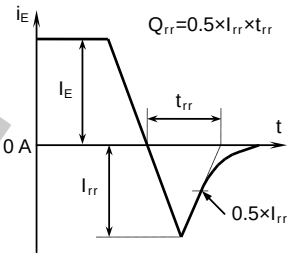


Tr1/Tr2: IGBT, Di1/Di2: DIODE

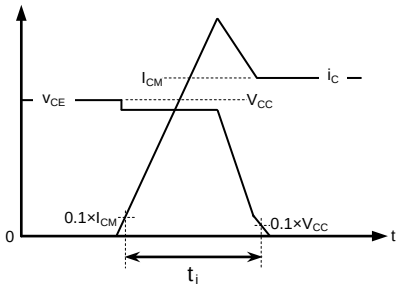
TEST CIRCUIT AND WAVEFORMS

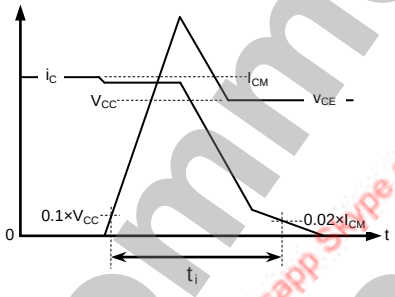


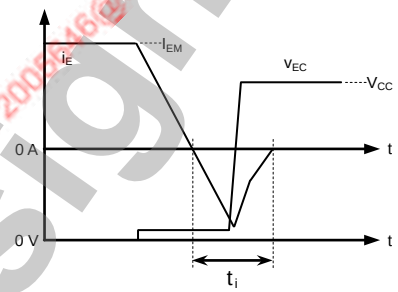




Switching characteristics test circuit and waveforms **t_{rr}, Q_{rr} test waveform**



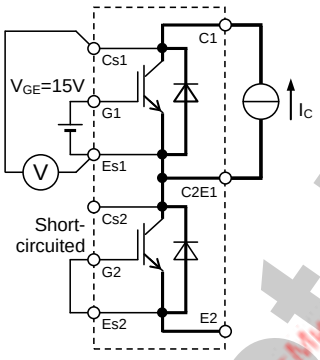


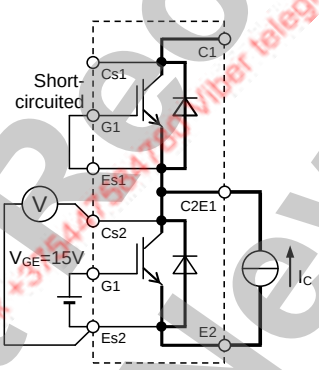


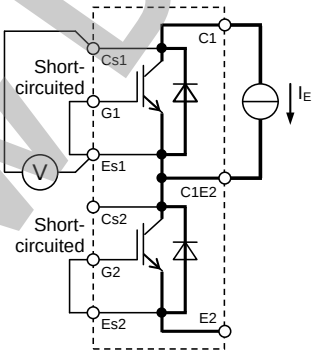
IGBT Turn-on switching energy **IGBT Turn-off switching energy** **DIODE Reverse recovery energy**

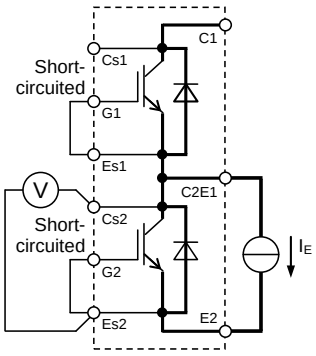
Turn-on / Turn-off switching energy and Reverse recovery energy test waveforms (Integral time instruction drawing)

TEST CIRCUIT







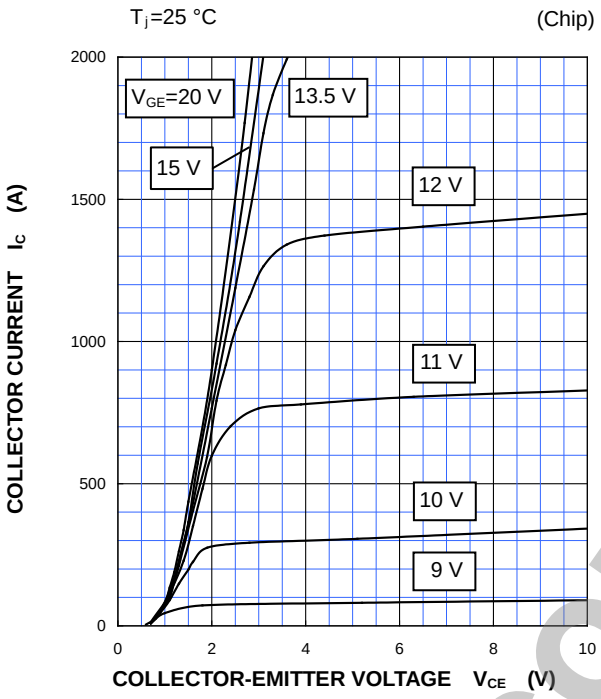


Tr1 **Tr2** **Di1** **Di2**

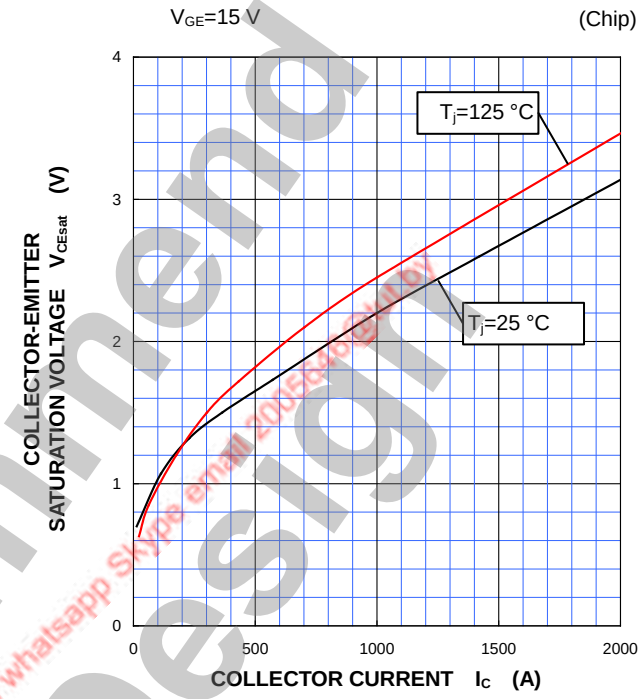
V_{CEsat} test circuit **V_{EC} test circuit**

PERFORMANCE CURVES

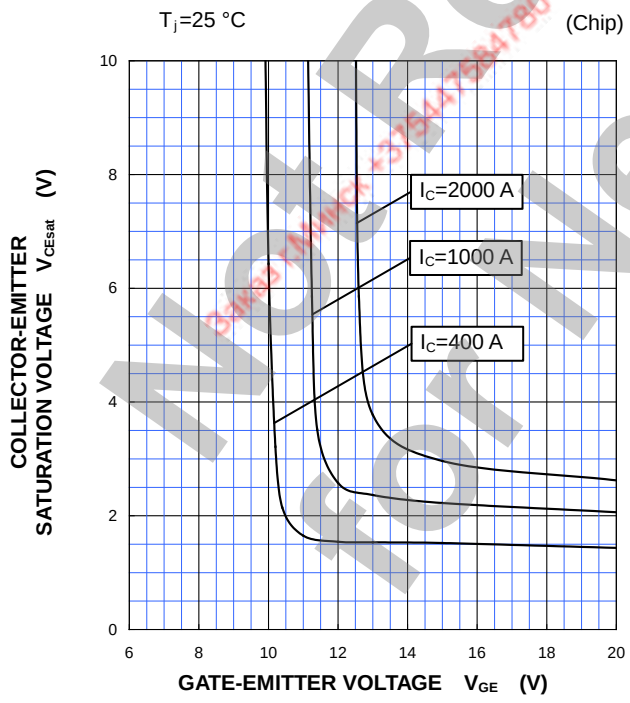
OUTPUT CHARACTERISTICS (TYPICAL)



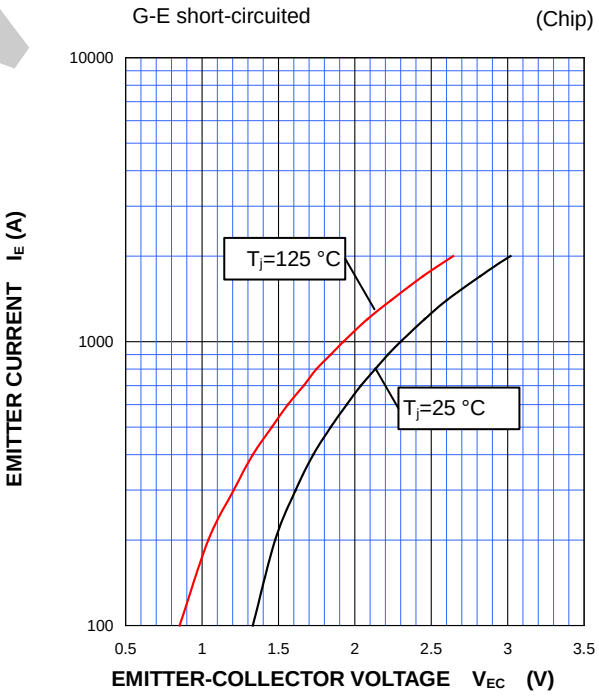
COLLECTOR-EMITTER SATURATION VOLTAGE CHARACTERISTICS (TYPICAL)



COLLECTOR-EMITTER SATURATION VOLTAGE CHARACTERISTICS (TYPICAL)



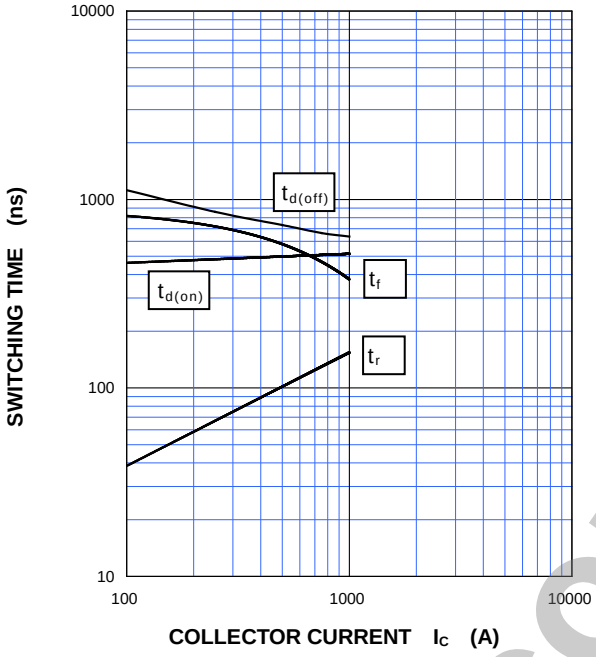
FREE WHEELING DIODE FORWARD CHARACTERISTICS (TYPICAL)



PERFORMANCE CURVES

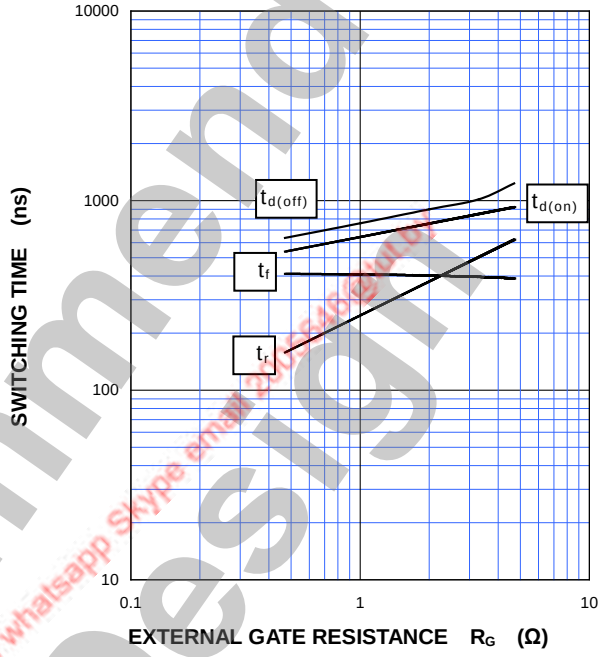
HALF-BRIDGE SWITCHING CHARACTERISTICS (TYPICAL)

V_{CC}=1000 V, V_{GE}=±15 V, R_G=0.47 Ω, T_j=125 °C, INDUCTIVE LOAD



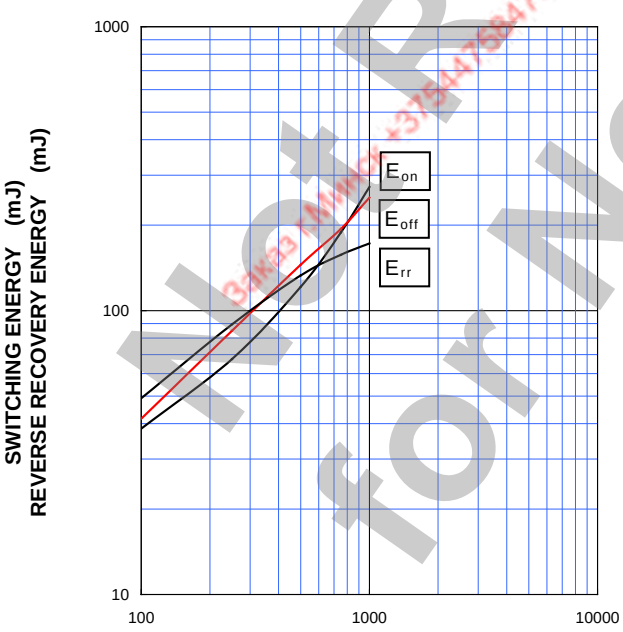
HALF-BRIDGE SWITCHING CHARACTERISTICS (TYPICAL)

V_{CC}=1000 V, I_C=1000 A, V_{GE}=±15 V, T_j=125 °C, INDUCTIVE LOAD



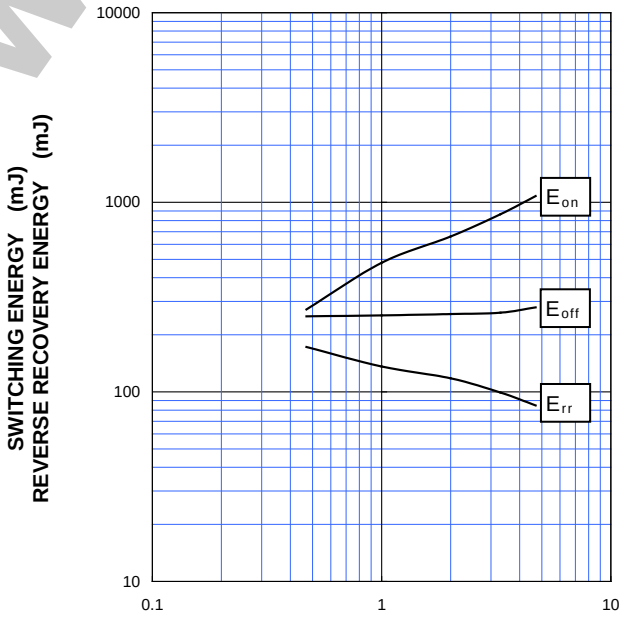
HALF-BRIDGE SWITCHING CHARACTERISTICS (TYPICAL)

V_{CC}=1000 V, V_{GE}=±15 V, R_G=0.47 Ω, T_j=125 °C, INDUCTIVE LOAD, PER PULSE



HALF-BRIDGE SWITCHING CHARACTERISTICS (TYPICAL)

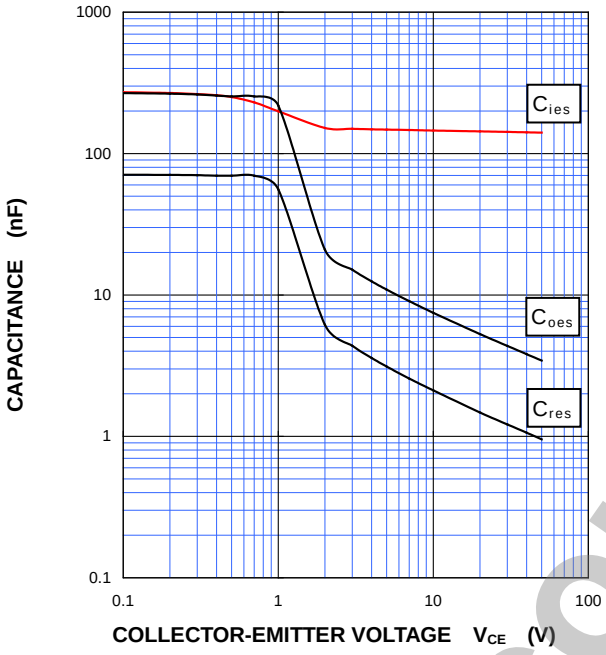
V_{CC}=1000 V, I_C/I_E=1000 A, V_{GE}=±15 V, T_j=125 °C, INDUCTIVE LOAD, PER PULSE



PERFORMANCE CURVES

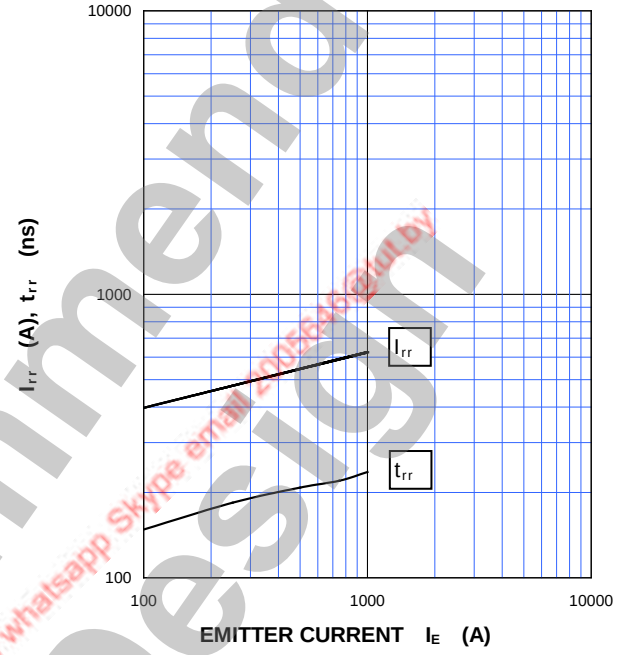
CAPACITANCE CHARACTERISTICS (TYPICAL)

G-E short-circuited, T_j=25 °C



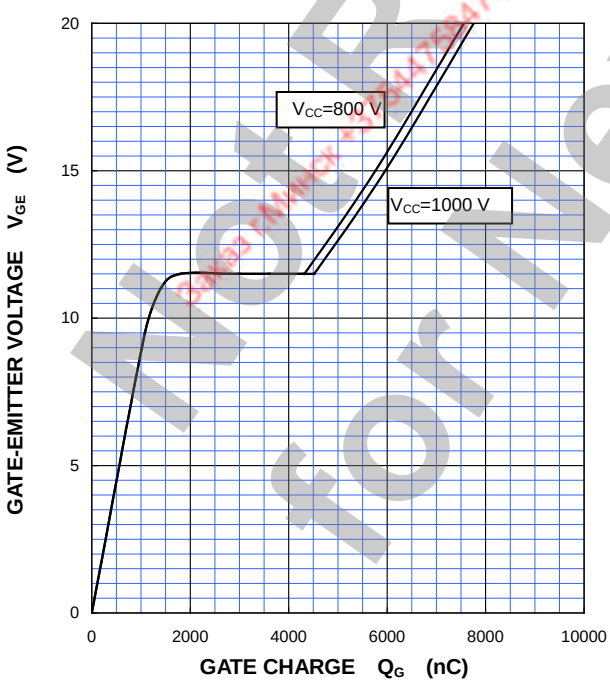
FREE WHEELING DIODE REVERSE RECOVERY CHARACTERISTICS (TYPICAL)

V_{CC}=1000 V, V_{GE}=±15 V, R_G=0.47 Ω, T_j=125 °C, INDUCTIVE LOAD



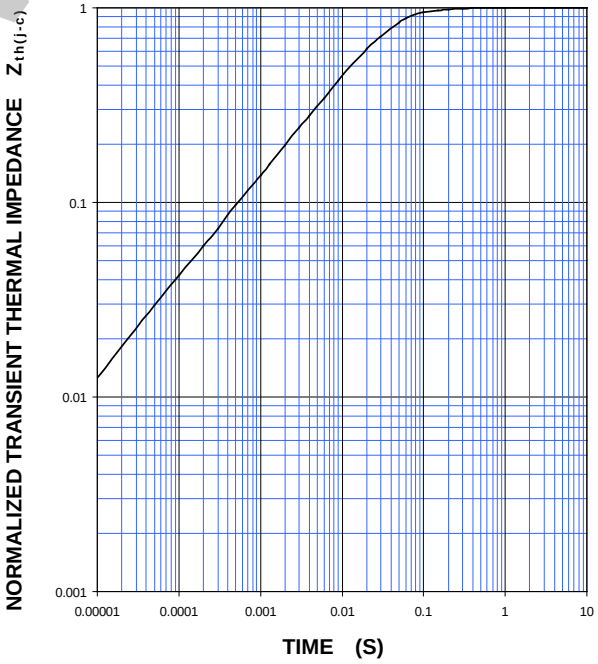
GATE CHARGE CHARACTERISTICS (TYPICAL)

I_C=1000 A, T_j=25 °C



TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (MAXIMUM)

Single pulse, T_C=25°C
$R_{th(j-c)Q}$=14 K/kW, $R_{th(j-c)D}$=23 K/kW



Keep safety first in your circuit designs!

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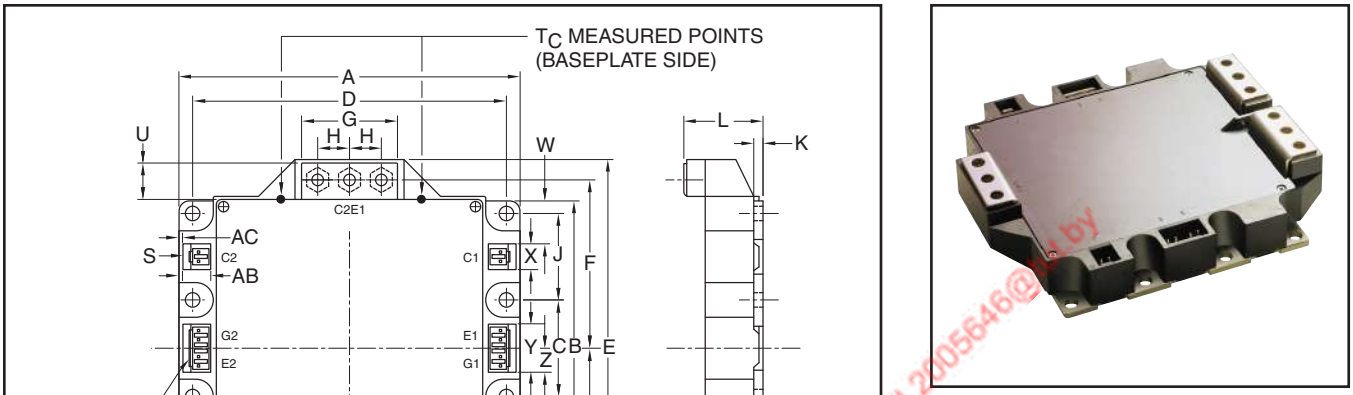
Powerex, Inc., 173 Pavilion Lane, Youngwood, Pennsylvania 15697 (724) 925-7272

CM1000E3U-34NF

Mega Power Chopper IGBTMOD™
1000 Amperes/1700 Volts



Outline Drawing and Circuit Diagram

Dimensions	Inches	Millimeters
A	5.91	150.0
B	5.10	129.5
C	1.67±0.01	42.5±0.25
D	5.41±0.01	137.5±0.25
E	6.54	166.0
F	2.91±0.01	74.0±0.25
G	1.65	42.0
H	0.55	14.0
J	1.50±0.01	38.0±0.25
K	0.16	4.0
L	1.36 +0.04/-0.02	34.6 +1.0/-0.5

Housing Type (J.S.T. MFG. CO. LTD)
S = VHR-2N
T = VHR-5N

Dimensions	Inches	Millimeters
M	0.075±0.008	1.9±0.2
P	1.0	25.1
R	M6 Metric	M6
U	0.62	15.7
V	0.71	18.0
W	0.75	19.0
X	0.43	11.0
Y	0.83	21.0
Z	0.41	10.5
AA	0.22	5.5
AB	0.47	12.0
AC	0.08	2.0

Description:
Powerex Chopper IGBTMOD™ Modules are designed for use in switching applications. Each module consists of one IGBT Transistor having a reverse-connected super-fast recovery free-wheel diode and an anode-collector connected super-fast recovery free-wheel diode. All components and interconnects are isolated from the heat sinking baseplate, offering simplified system assembly and thermal management.

Features:
- ☐ Low Drive Power
- ☐ Low $V_{CE(sat)}$
- ☐ Discrete Super-Fast Recovery Free-Wheel Diode
- ☐ Isolated Baseplate for Easy Heat Sinking

Applications:
- ☐ High Power DC Power Supply
- ☐ Large DC Motor Drives
- ☐ Utility Interface Inverters

Ordering Information:
Example: Select the complete module number you desire from the table - i.e. CM1000E3U-34NF is a 1000V (V_{CES}), 1700 Ampere Chopper IGBTMOD Power Module.

Type	Current Rating Amperes	V_{CES} Volts (x 50)
CM	1000	34

Powerex, Inc., 173 Pavilion Lane, Youngwood, Pennsylvania 15697 (724) 925-7272

CM1000E3U-34NF
Mega Power Chopper IGBTMOD™
1000 Amperes/1700 Volts

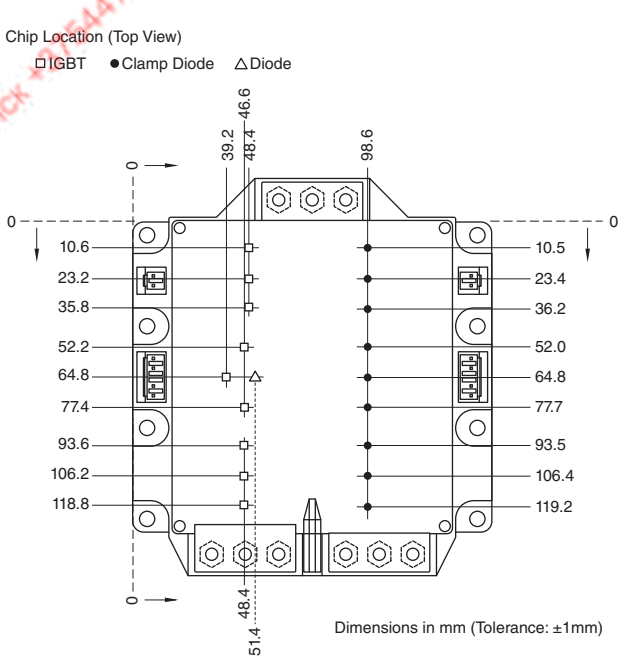
Absolute Maximum Ratings, T_j = 25°C unless otherwise specified

Ratings	Symbol	CM1000E3U-34NF	Units
Junction Temperature	T_j	-40 to 150	°C
Storage Temperature*7	T_{stg}	-40 to 125	°C
Collector-Emitter Voltage (G-E SHORT)	V_{CES}	1700	Volts
Gate-Emitter Voltage (C-E SHORT)	V_{GES}	±20	Volts
Collector Current DC (T_C = 104°C)*6	I_C	1000	Amperes
Peak Collector Current (Pulse)*2	I_{CM}	2000	Amperes
Emitter Current (T_C = 25°C)*4	I_E*1	75	Amperes
Peak Emitter Current (Pulse)*2	I_{EM}*1	150	Amperes
Maximum Collector Dissipation (T_C = 25°C)*2*4	P_C	3900	Watts
Mounting Torque, M6 Mounting Screws (Max.)	–	40	in-lb
Mounting Torque, M6 Main Terminal Screw (Max.)	–	40	in-lb
Weight (Typical)	–	1400	Grams
Isolation Voltage (Main Terminal to Baseplate, AC 1 min.)	V_{iso}	3500	V_{rms}

Clamp Diode Part, T_j = 25°C unless otherwise specified

Repetitive Peak Reverae Voltage	V_{RRM}	1700	Volts
Forward Current (T_C = 25°C)*4	I_F	1000	Amperes
Peak Forward Current (Pulse)*2	I_{FM}	2000	Amperes

*1 I_E, I_{EM}, and V_{EC} represent ratings and characteristics of the anti-parallel, emitter-to-collector free-wheel diode (FWDi).
*2 Pulse width and repetition rate should be such that device junction temperature (T_j) does not exceed $T_{j(max)}$ rating.
*4 Case temperature (T_C) is baseplate side.
*6 Case temperature (T_C') and heatsink temperature (T_f') measured point is just under the chips.
*7 The operation temperature is restrained by the permission temperature of female connector housing.



CM1000E3U-34NF
Mega Power Chopper IGBTMOD™
1000 Amperes/1700 Volts

Electrical Characteristics, T_j = 25°C unless otherwise specified

Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Collector-Cutoff Current	I_{CES}	$V_{CE} = V_{CES}$, V_{GE} = 0V	–	–	1	mA
Gate Leakage Current	I_{GES}	$V_{GE} = V_{GES}$, V_{CE} = 0V	–	–	0.5	μA
Gate-Emitter Threshold Voltage	$V_{GE(th)}$	I_C = 100mA, V_{CE} = 10V	5.5	7	8.5	Volts
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C = 1000A, V_{GE} = 15V, T_j = 25°C*3	–	2.2	2.8	Volts
(Without Lead Resistance)	(Chip)	I_C = 1000A, V_{GE} = 15V, T_j = 125°C*3	–	2.45	–	Volts
Module Lead Resistance	$R_{(lead)}$	I_C = 1000A, Terminal-Chip	–	0.286	–	mΩ
Input Capacitance	C_{ies}	V_{CE} = 10V, V_{GE} = 0V	–	–	220	nF
Output Capacitance	C_{oes}		–	–	25	nF
Reverse Transfer Capacitance	C_{res}		–	–	4.7	nF
Total Gate Charge	Q_G	V_{CC} = 1000V, I_C = 1000A, V_{GE} = 15V	–	6000	–	nC
Turn-on Delay Time	$t_{d(on)}$	V_{CC} = 1000V, I_C = 1000A,	–	–	600	ns
Turn-on Rise Time	t_r	V_{GE} = ±15V,	–	–	150	ns
Turn-off Delay Time	$t_{d(off)}$	R_G = 0.47Ω,	–	–	900	ns
Turn-off Fall Time	t_f	Inductive Load	–	–	200	ns
Emitter-Collector Voltage*1	V_{EC}	I_E = 75A, V_{GE} = 0V*3	–	–	2.8	Volts
External Gate Resistance	R_G		0.47	–	4.7	Ω

Clamp Diode Characteristics, T_j = 25°C unless otherwise specified

Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Repetitive Peak Reverse Current	I_{RRM}	$V_R = V_{RRM}$	–	–	1	mA
Forward Voltage	V_{FM}	I_F =1000A*3	–	–	3.0	Volts
Reverse Recovery Time	t_{rr}	I_F =1000A	–	–	450	ns
Reverse Recovery Charge	Q_{rr}	I_F =1000A	–	90	–	μC

Thermal and Mechanical Characteristics, T_j = 25°C unless otherwise specified

Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Thermal Resistance, Junction to Case*4	$R_{th(j-c)}Q$	IGBT	–	–	0.032	°C/W
Thermal Resistance, Junction to Case*4	$R_{th(j-c)}D$	Clamp	–	–	0.053	°C/W
Thermal Resistance, Junction to Case*6	$R_{th(j-c')}Q$	IGBT	–	–	0.014	°C/W
Thermal Resistance, Junction to Case*6	$R_{th(j-c')}D$	Clamp	–	–	0.023	°C/W
Thermal Resistance, Junction to Case*4	$R_{th(c-f)}D$	Thermal Grease Applied per 1/2 Module*5	–	0.016	–	°C/W
Contact Thermal Resistance*6	$R_{th(c-f)}$	Thermal Grease Applied per 1/2 Module*5	–	0.012	–	°C/W

*1 I_E, I_{EM}, and V_{EC} represent ratings and characteristics of the anti-parallel, emitter-to-collector free-wheel diode (FWDi).
*3 Pulse width and repetition rate should be such as to cause negligible temperature rise.
*4 Case temperature (T_C) is baseplate side.
*5 Typical value is measured by using thermally conductive grease of λ = 0.9 [W/(m • K)].
*6 Case temperature (T_C') and heatsink temperature (T_f') measured point is just under the chips.

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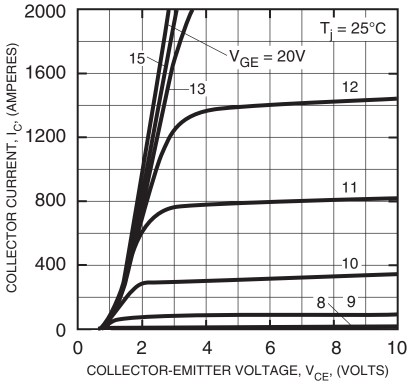
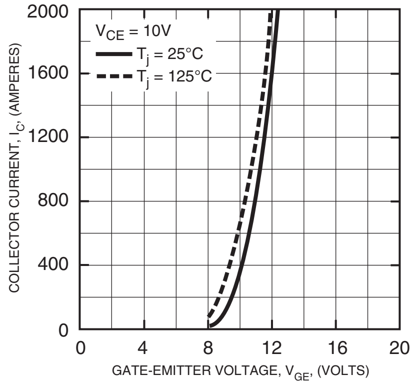
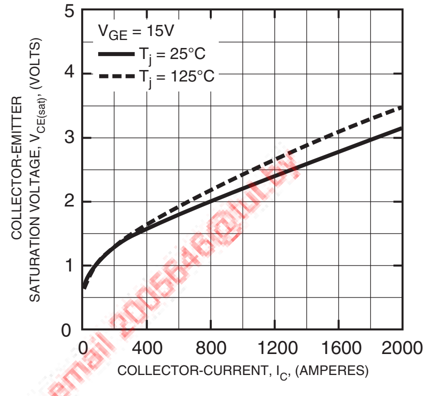
OUTPUT CHARACTERISTICS (TYPICAL)



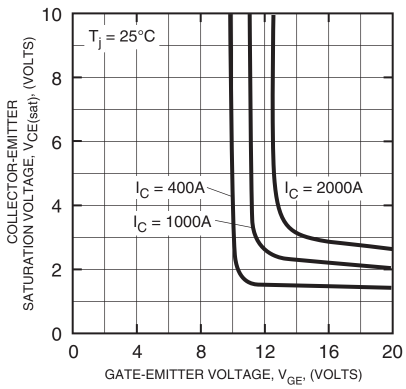
TRANSFER CHARACTERISTICS (TYPICAL)



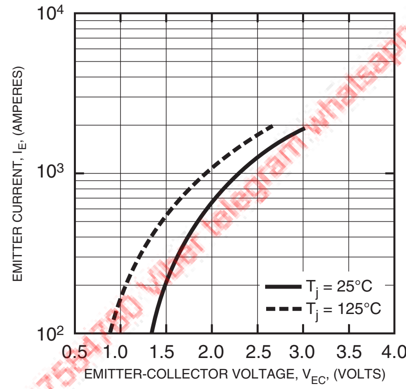
COLLECTOR-EMITTER SATURATION VOLTAGE CHARACTERISTICS (TYPICAL)



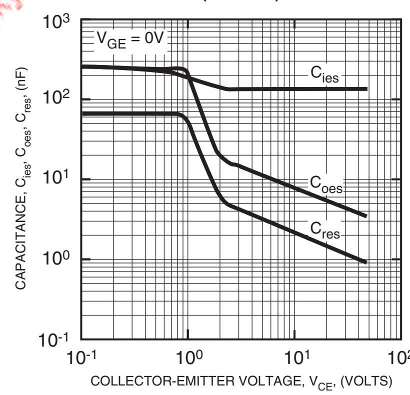
COLLECTOR-EMITTER SATURATION VOLTAGE CHARACTERISTICS (TYPICAL)



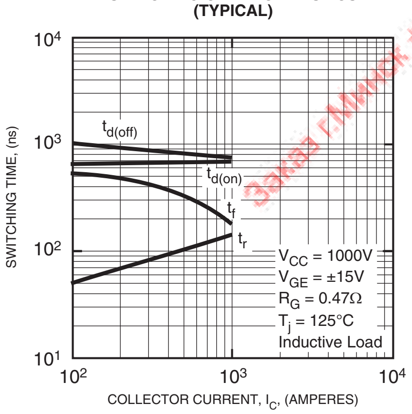
FREE-WHEEL DIODE FORWARD CHARACTERISTICS (TYPICAL)



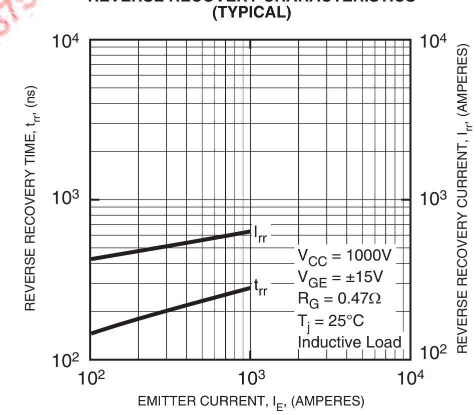
CAPACITANCE VS. V_{CE} (TYPICAL)



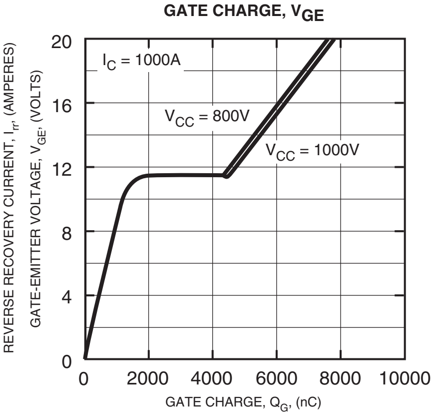
HALF-BRIDGE SWITCHING CHARACTERISTICS (TYPICAL)



REVERSE RECOVERY CHARACTERISTICS (TYPICAL)

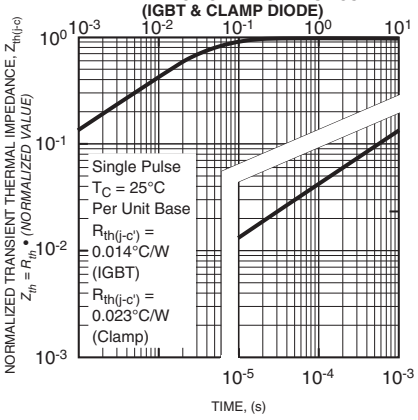


GATE CHARGE, V_{GE}

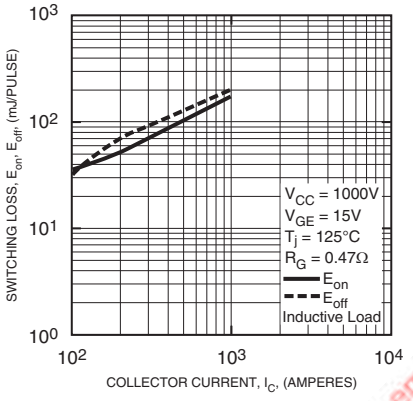


CM1000E3U-34NF
Mega Power Chopper IGBTMOD™
1000 Amperes/1700 Volts

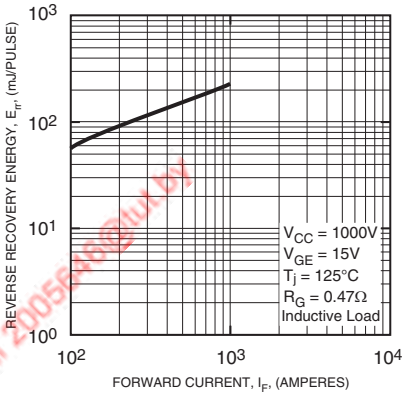
TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (IGBT & CLAMP DIODE)



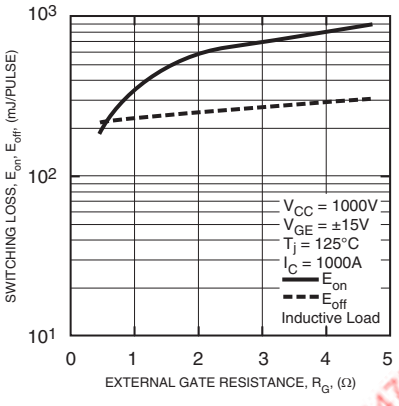
SWITCHING LOSS VS. COLLECTOR CURRENT (TYPICAL)



REVERSE RECOVERY ENERGY VS. FORWARD CURRENT (TYPICAL)



SWITCHING ENERGY VS. EXTERNAL GATE RESISTANCE (TYPICAL)



REVERSE RECOVERY ENERGY VS. EXTERNAL GATE RESISTANCE (TYPICAL)