MG001AL030060A

Converter - Brake Module

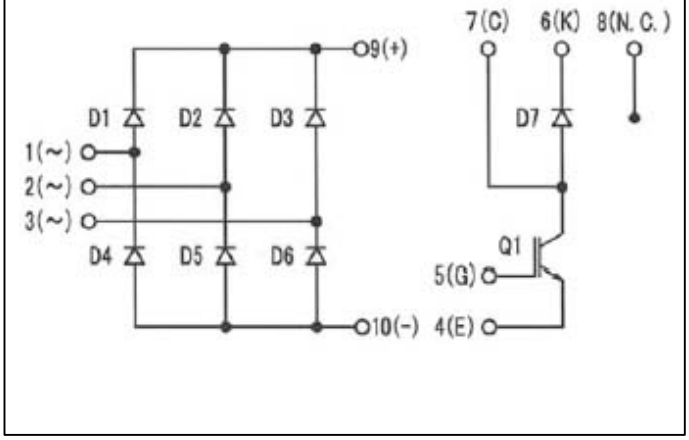
Feature

- Small DIP
- Isolated package
- High Voltage
- UL E142422
- Halogen free
- Pb free terminal
- RoHS:Yes

Outline

House Name: MG001

Equivalent circuit



●絶対最大定格 Absolute maximum ratings （指定のない場合は、Tc = 25℃ / Unless otherwise specified Tc = 25℃. ）

コンバータ部 / Converter

ダイオード / Diode

項目 Item	記号 Symbol	条件 Conditions	規格値 Ratings	単位 Unit
接合部温度 Junction temperature	T_j		150	℃
ピーク繰返し逆電圧 Repetitive peak reverse voltage	V_{RRM}		600	V
ピーク非繰返し逆電圧 Non-repetitive peak reverse voltage	V_{RSM}		800	V
平均順電流 Average forward current	$I_{F(AV)}$	50Hz, 正弦波, 抵抗負荷, T_c=136℃ 50Hz, Sine wave, Resistance load, T_c=136℃	30	A
サージ順電流 Surge forward current	I_{FSM}	50Hz, 正弦波, 非繰返し, 1ｻｲｸﾙ, せん頭値, 1素子当り, Tj=25℃ 50Hz, Sine wave, Not-repetitive, 1cycle, Peak value, Per diode, Tj=25℃	300	A
	I_{FSM1}	tp=1ms, 正弦波, 非繰返し, せん頭値, 1素子当り, Tj=25℃ tp=1ms, Sine wave, Not-repetitive, Peak value, Per diode, Tj=25℃	700	A
電流二乗時間積 Current squared time	I^2t	1ms≦t＜10ms, 1素子当り, Tj=25℃ 1ms≦t<10ms, Per diode, Tj=25℃	300	A^2S

最大瞬間接合部温度は150℃(at Tc≦136℃)ですが、安全動作させるための平均動作接合部温度はTj≦125℃(at Tc≦111℃)でご使用ください。
The maximum rated temperature of the is 150℃(at Tc≦136℃)
, but in order to operate safely, please use the average operating temperature Tj≦125℃(at Tc≦111℃).

ブレーキ部 / Brake

IGBT

項目 Item	記号 Symbol	条件 Conditions	規格値 Ratings	単位 Unit
チャネル温度 Channel temperature	T_{ch}		150	℃
コレクタ-エミッタ間電圧 Collector-emitter voltage	V_{CES}		600	V
ゲート・エミッタ間電圧 Gate-emitter voltage	V_{GES}		±20	V
コレクタ電流 (直流) Continuous collector current (DC)	I_C		30	A
コレクタ電流 (ピーク) Continuous collector current (Peak)	I_{CP}	パルス幅 10μs, Duty = 1/100 Pulse width 10μs, Duty = 1/100	60	A
全損失 Total power dissipation	P_T		125	W

ブレーキ部 / Brake

ダイオード / Diode

項目 Item	記号 Symbol	条件 Conditions	規格値 Ratings	単位 Unit
接合部温度 Junction temperature	T_j		150	℃
ピーク繰返し逆電圧 Repetitive peak reverse voltage	V_{RRM}		600	V
平均順電流 Average forward current	$I_{F(AV)}$	50Hz, 正弦波, 抵抗負荷, T_c=137℃ 50Hz, Sine wave, Resistance load, T_c=137℃	3.0	A
サージ順電流 Surge forward current	I_{FSM}	50Hz, 正弦波, 非繰返し, 1ｻｲｸﾙ, せん頭値, Tj=25℃ 50Hz, Sine wave, Not-repetitive, 1cycle, Peak value, Tj=25℃	90	A
	I_{FSM1}	tp=1ms, 正弦波, 非繰返し, せん頭値, Tj=25℃ tp=1ms, Sine wave, Not-repetitive, Peak value, Tj=25℃	210	A
電流二乗時間積 Current squared time	I^2t	1ms≦tp＜10ms, Tj=25℃ 1ms≦tp<10ms, Tj=25℃	28	A^2s

最大瞬間接合部温度は150℃(at Tc≦137℃)ですが、安全動作させるための平均動作接合部温度はTj≦125℃(at Tc≦112℃)でご使用ください。
The maximum rated temperature of the is 150℃(at Tc≦137℃)
, but in order to operate safely, please use the average operating temperature Tj≦125℃(at Tc≦112℃).

モジュール共通 / Module

項目 Item	記号 Symbol	条件 Conditions	規格値 Ratings	単位 Unit
保存温度 Storage temperature	T_{stg}		-40～125	℃
絶縁耐圧 Dielectric strength	V_{dis}	一括端子・ケース間, AC1分間印加 Terminals to case, AC 1minute	2.5	kV
締め付けトルク Mounting Torque	TOR	主端子・取付用(推奨値：0.8N・m) main terminal fitting part (Recommended Torque : 0.8N・m)	1.5	N・m

●電気的・熱的特性 Electrical and thermal characteristics （指定のない場合は、Tc = 25℃ / Unless otherwise specified Tc = 25℃. ）

コンバータ部 / Converter

ダイオード / Diode

項目 Item	記号 Symbol	条件 Conditions	規格値 Ratings			単位 Unit
			Min.	Typ.	Max.	
順電圧 Forward voltage	V_F	I_F=10A, パルス測定, 1素子当たり I_F=10A, Pulse measurement, Per diode	–	–	1.05	V
逆電流 Reverse current	I_R	V_R=600V, パルス測定, 1素子当たり V_R=600V, Pulse measurement, Per diode	–	–	10	μA

ブレーキ部 / Brake

IGBT

項目 Item	記号 Symbol	条件 Conditions	規格値 Ratings Min.	Typ.	Max.	単位 Unit
コレクタ-エミッタ間降伏電圧 Collector-emitter breakdown voltage	$V_{(BR)CES}$	I_C=1mA, V_{GE}=0V	600	–	–	V
コレクタ遮断電流 Zero gate voltage collector current	I_{CES}	V_{CE}=600V, V_{GE}=0V	–	–	10	μA
ゲート漏れ電流 Gate-emitter leakage current	I_{GES}	V_{GE}=±20V, V_{CE}=0V	–	–	±1	μA
コレクタ・エミッタ間オン電圧 Static collector-emitter saturation voltage	$V_{CE(sat)}$	I_C=30A, V_{GE}=15V	–	1.5	2.0	V
ゲートしきい値電圧 Gate threshold voltage	V_{TH}	I_C=1mA, V_{CE}=10V	4.5	6.0	7.5	V
ゲート全電荷量 Total gate charge	Qg	V_{CC}=400V, V_{GE}=15V, I_C=30A	–	95	–	nC
ゲート-エミッタ電荷量 Gate to emitter charge	Qge		–	28	–	
ゲート-コレクタ電荷量 Gate to collector charge	Qgc		–	39	–	
入力容量 Input capacitance	Cies	V_{CE}=25V, V_{GE}=0V, f=1MHz	–	3290	–	pF
帰還容量 Reverse transfer capacitance	Cres		–	56	–	
出力容量 Output capacitance	Coes		–	108	–	
ターンオン遅延時間 Turn-on delay time	td(on)	I_C=30A, V_{CC}=300V, L=100μH, $V_{GS(+)}$=15V, $V_{GS(-)}$=-15V, R_G=50Ω	–	147	–	ns
上昇時間 Rise time	tr		–	103	–	
ターンオフ遅延時間 Turn-off delay time	td(off)		–	205	–	
降下時間 Fall time	tf		–	182	–	

ブレーキ部 / Brake

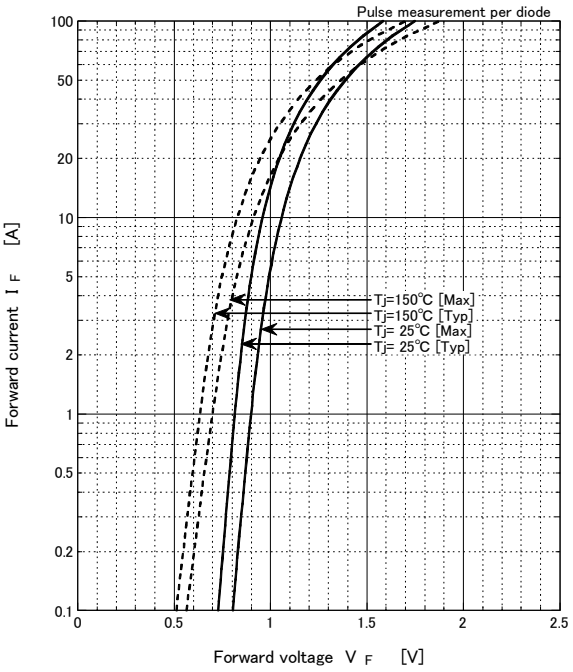
ダイオード / Diode

項目 Item	記号 Symbol	条件 Conditions	規格値 Ratings Min.	Typ.	Max.	単位 Unit
順電圧 Forward voltage	V_F	I_F=3A, パルス測定 I_F=3A, Pulse measurement	–	–	1.65	V
逆電流 Reverse current	I_R	V_R=600V, パルス測定 V_R=600V, Pulse measurement	–	–	10	μA
逆回復時間 Reverse recovery time	trr	I_F=0.5A, I_R=1.0A, 0.25I_R	–	–	50	ns

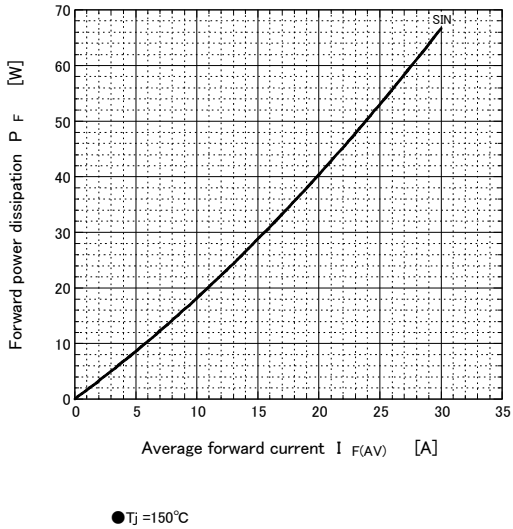
モジュール共通 / Module

項目 Item	記号 Symbol	条件 Conditions			規格値 Ratings Min.	Typ.	Max.	単位 Unit
熱抵抗 Thermal resistance	$R_{th(j-c)}$	接合部・ケース間 Junction to case	コンバータ部 Converter	モジュールあたり(合計) Per Module (Total)	–	–	0.2	℃/W
			ブレーキ部 Brake	1素子あたり Per IGBT	–	–	1.0	
				1素子あたり Per Diode	–	–	2.4	

Forward voltage

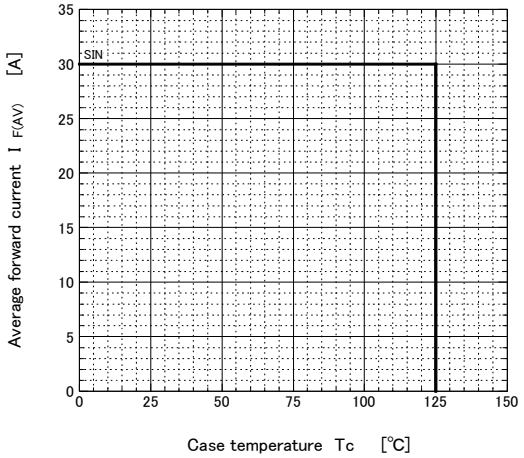


Forward power dissipation

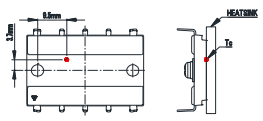


●Tj =150℃

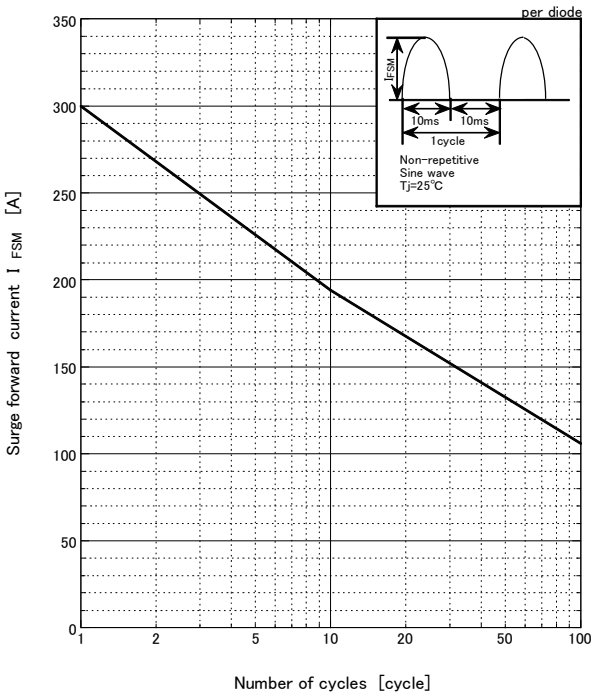
Derating curve



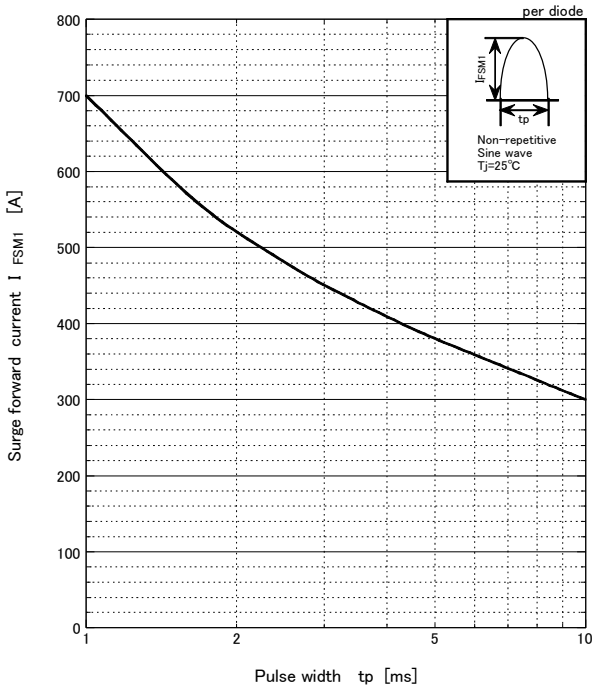
●V_R = 600V
R-load
With heatsink



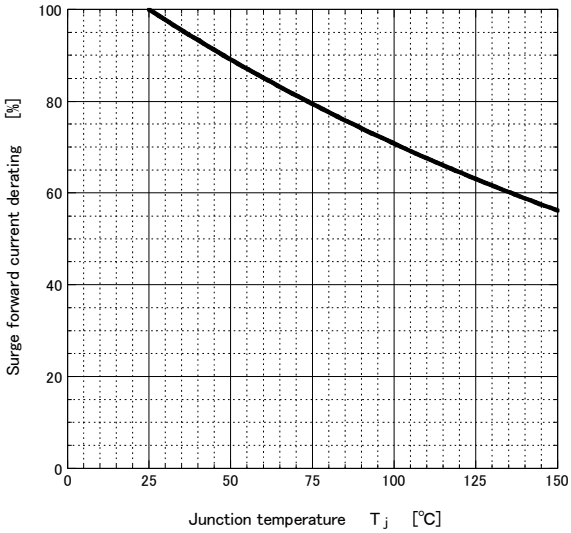
Surge forward current capability



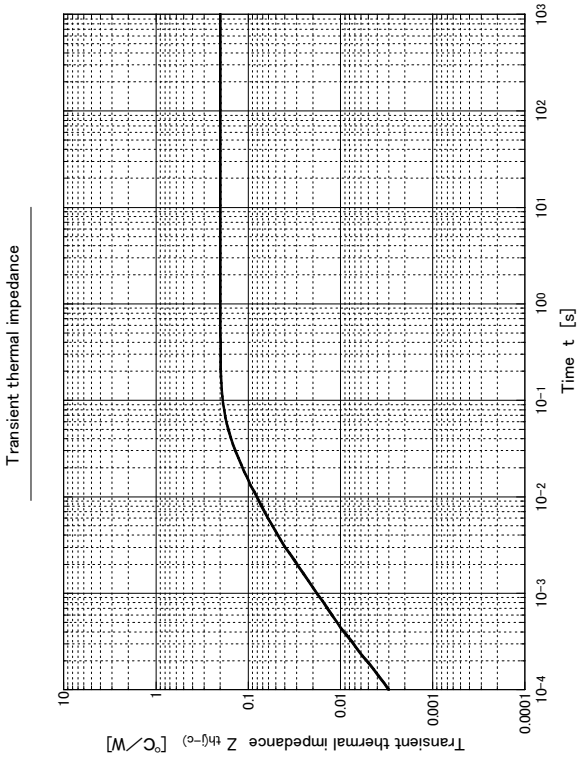
Surge forward current capability

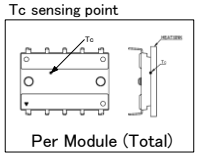


Surge forward current derating
vs Junction temperature

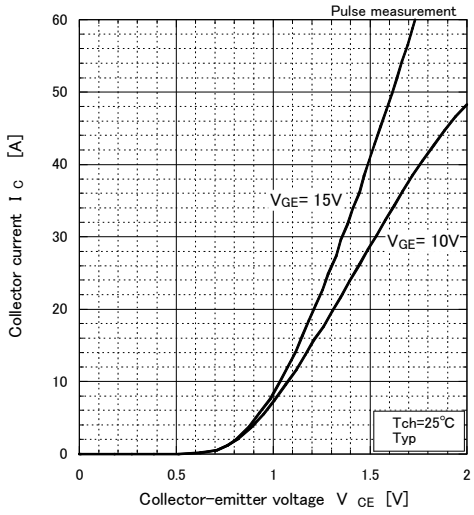


Transient thermal impedance



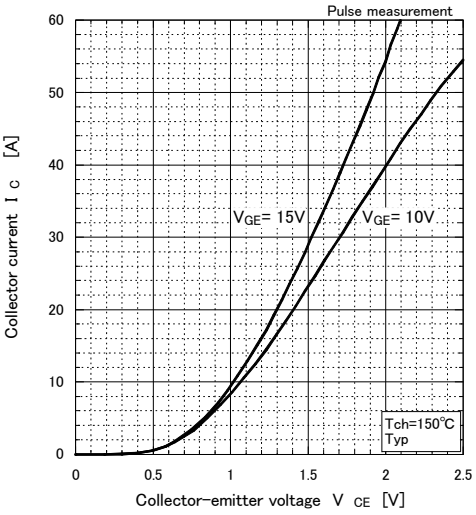


Typical output characteristics



Note: The above characteristics curves are presented for reference only and not guaranteed by production test,unless otherwise noted.

Typical output characteristics



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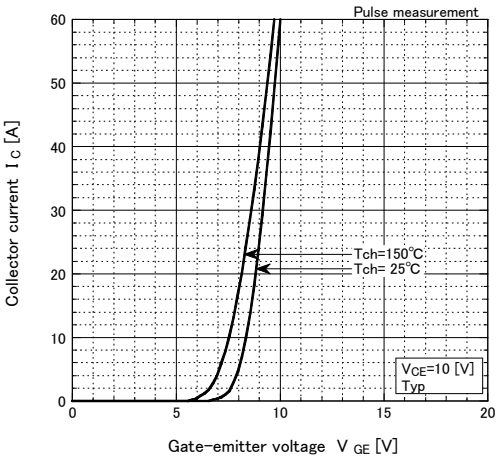
Transfer characteristics



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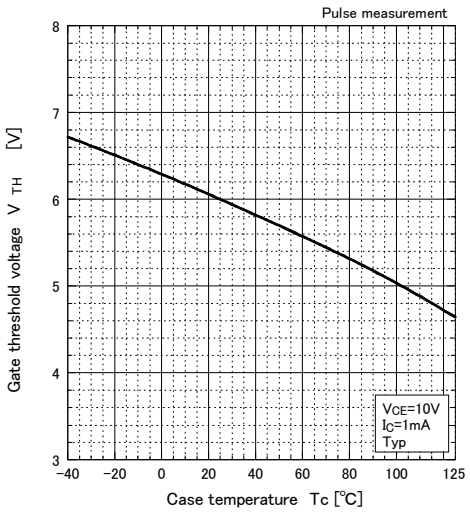
Gate threshold voltage
vs case temperature



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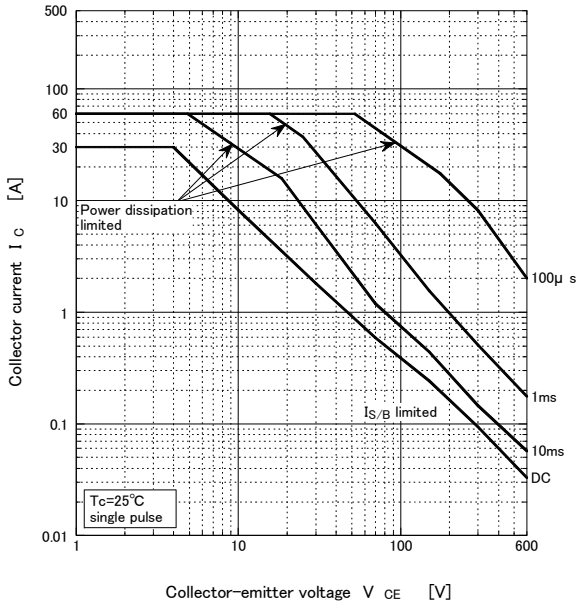
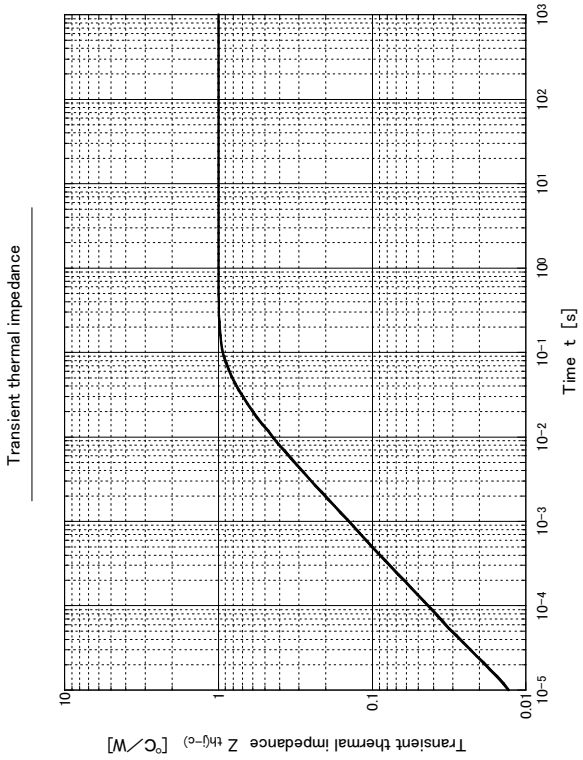
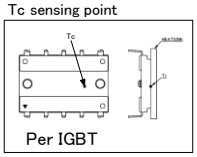
Safe operating area

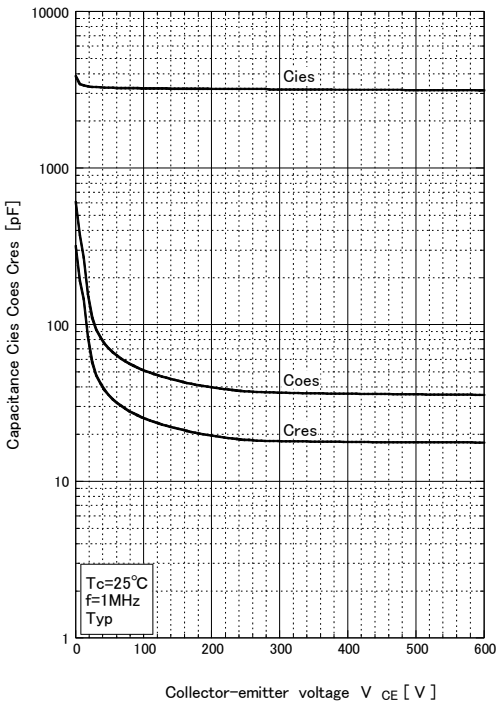




Tc sensing point

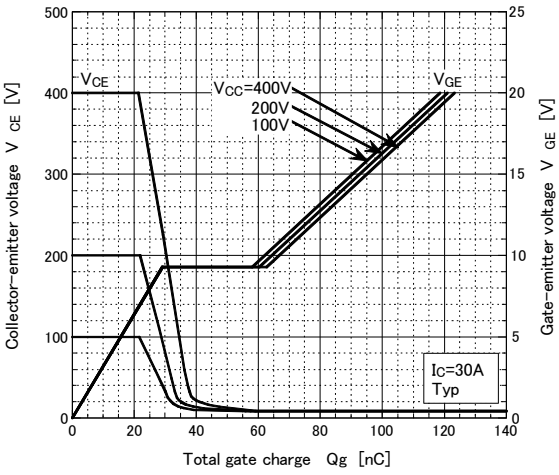


Capacitance characteristics



Note: The above characteristics curves are presented for reference only and not guaranteed by production test,unless otherwise noted.

Gate charge characteristics



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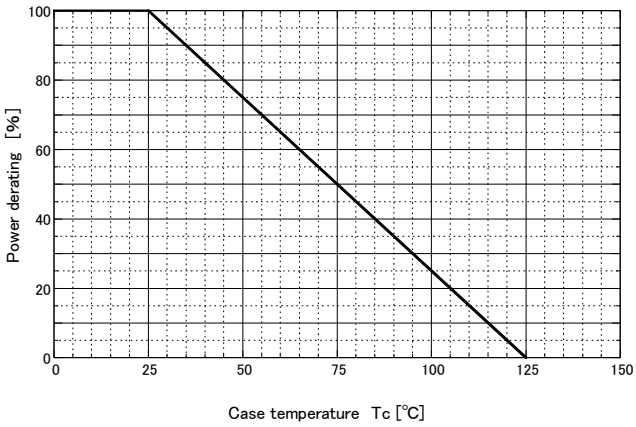
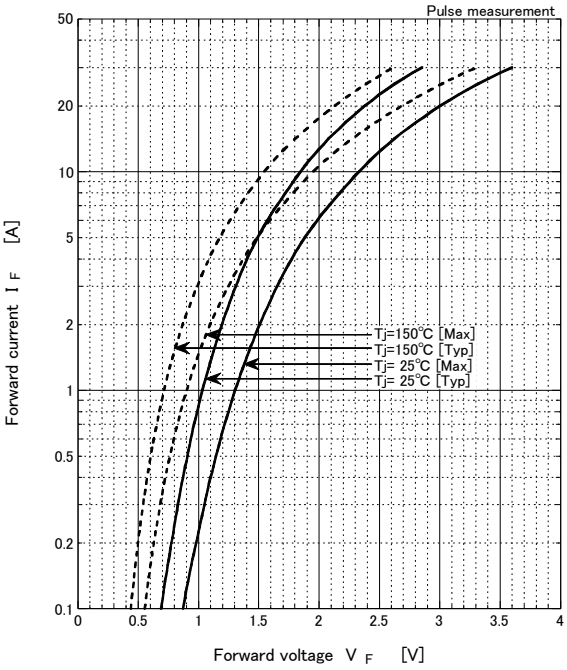
Power derating - case temperature

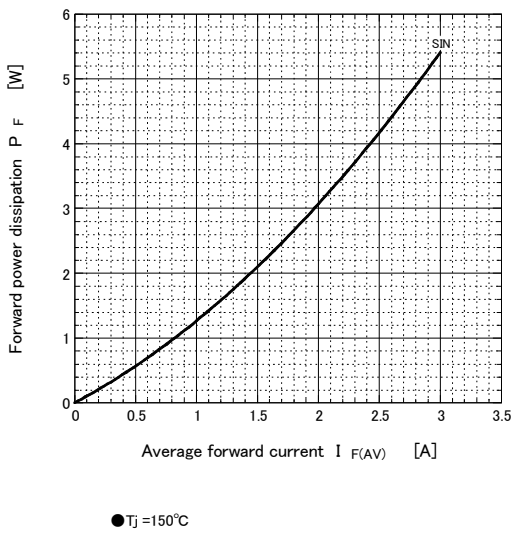


Note: MOS FET characteristics

Forward voltage

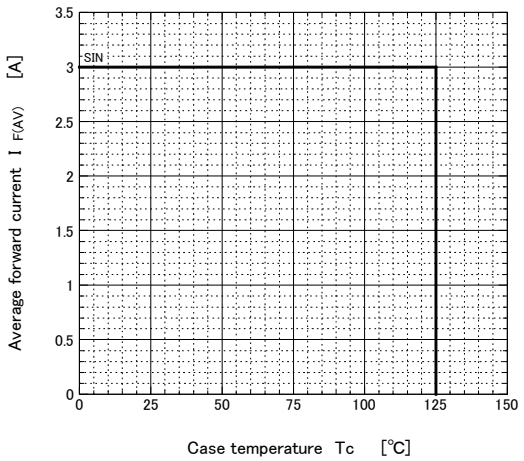


Forward power dissipation

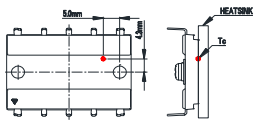


●Tj =150℃

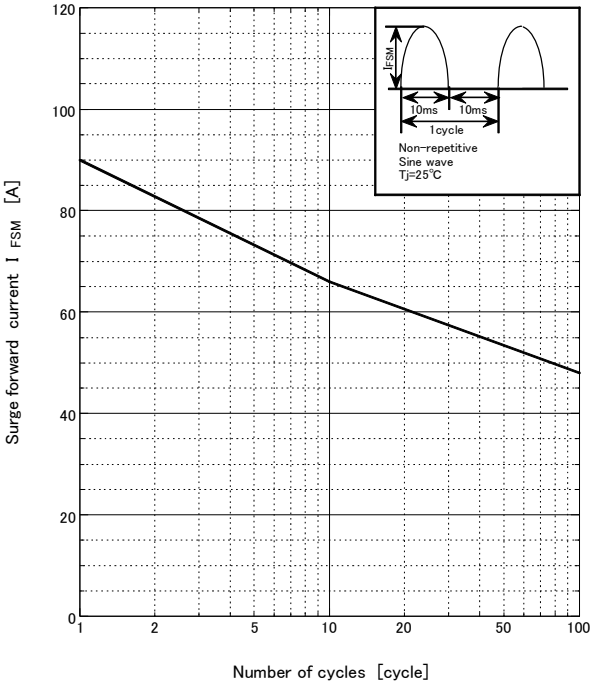
Derating curve



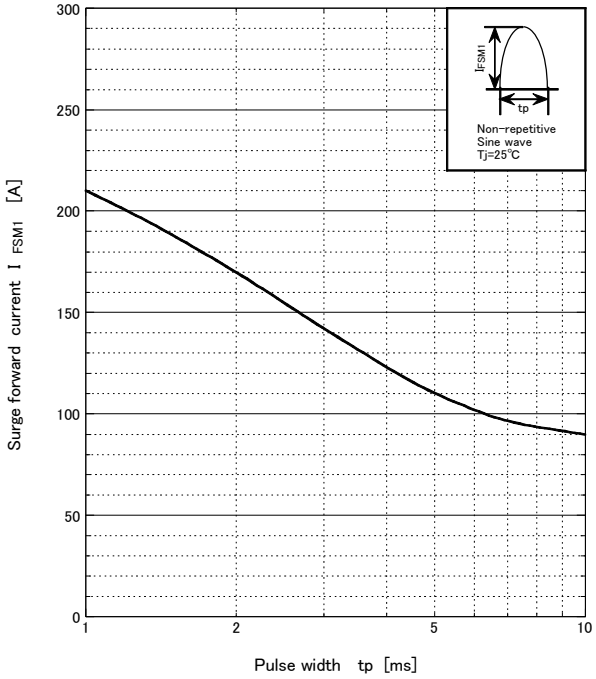
●VR = 600V
R-load
With heatsink



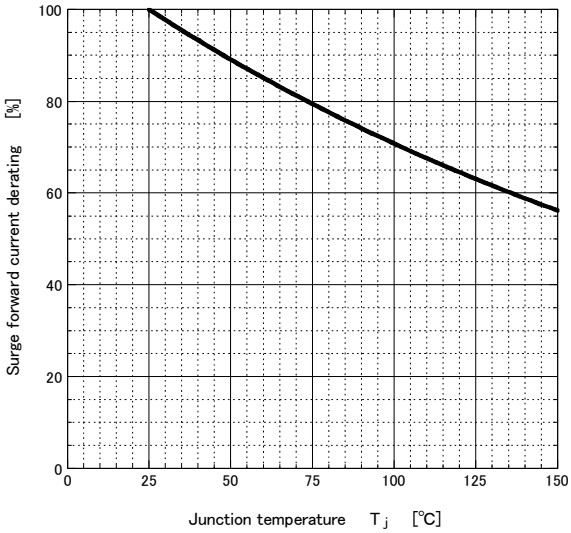
Surge forward current capability



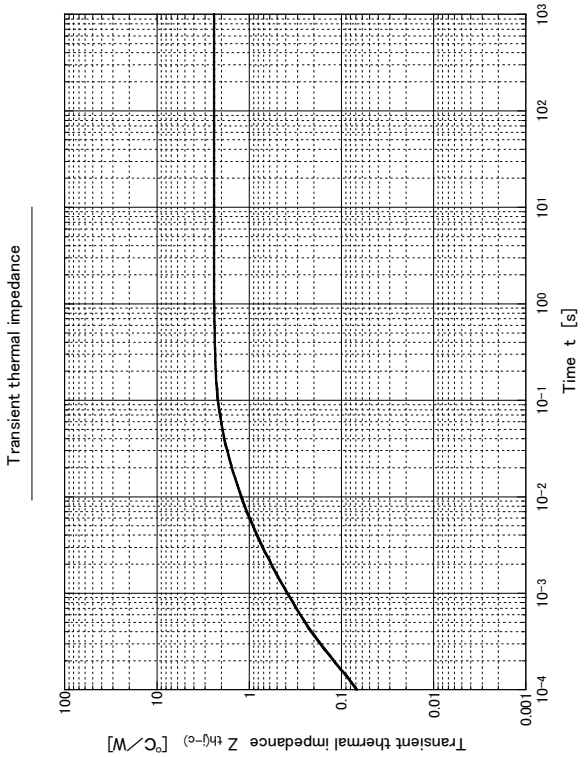
Surge forward current capability



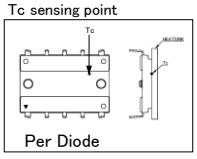
Surge forward current derating
vs Junction temperature



Transient thermal impedance



Tc sensing point

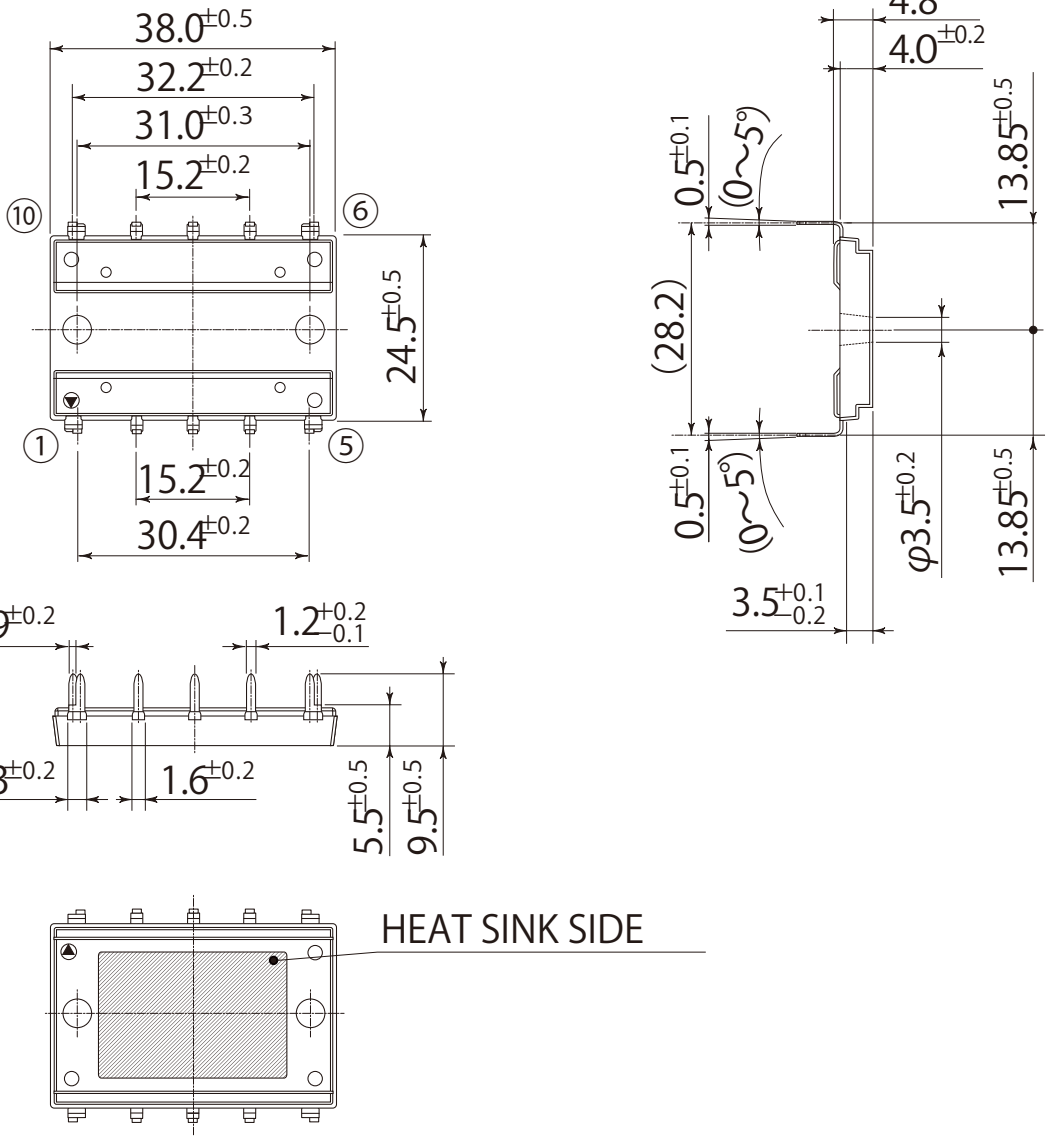


Package Outline-Dimensions

unit : mm
scale: 1/1

F4

JEDEC Code	–
JEITA Code	–
House Name	MG001



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