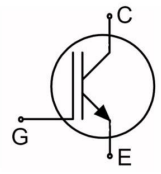
Features

- Low gate charge
- Trench-Stop Technology
- High speed switching
  Saturation voltage:VCE(sat),typ= 1.18V

Applications

- General purpose inverters
- Induction heating(IH)
- Welding Converters
- UPS



Absolute Ratings（Tc=25℃）

Parameter	Symbol		Value	Unit
Collector-Emitter Voltage	Vces		380	V
Collector Current-continuous	Ic	Tc=25℃	100	A
		Tc=100℃	50	
Collector Current-pulse(note 1)	I_{CM}		300	A
Continuous Gate-Emitter Voltage	V_{GE}		±20	V
Transient Gate-emitter voltage	V_{GE}		±30	V
Power Dissipation	P_D		260	W
Operating Temperature Range	T_J		-55~+150	℃
Storage Temperature Range	T_{STG}		-55~150	℃
Maximum Lead Temperature for Soldering Purposes	T_L		300	℃

Thermal Characteristic

Parameter	Symbol	Tests conditions	Min	Typ	Max	Units
Off-Characteristics						
Collector-Emitter Voltage	BV_{CES}	I_C=250μA,V_{GE}=0V	380	-	-	V
Zero Gate Voltage Collector Current	I_{CES}	V_{CE}=V_{CES},			10	μA
		V_{GE}=0V，T_J=125℃			1000	
Gate-body leakage current	I_{GES}	V_{CE}=0V,V_{GE}=±20V	-	-	±100	nA
Transconductance	g_{fs}	V_{CE}=10V,I_C=40A	25	-	-	S

On-Characteristics						
Gate-Emitter Threshold Voltage	$V_{GE(th)}$	V_{CE}=V_{GE}, I_C=250uA	3.4	-	5.9	V
Collector-Emitter saturation Voltage	V_{CESAT}	V_{GE}=15V,I_C=36A		1.18	1.5	V
Dynamic Characteristics						
Input capacitance	C_{ies}	V_{CE}=25V, V_{GE}=0V, f=1.0MHz	-	3050	-	pF
Output capacitance	C_{oes}		-	168	-	pF
Reverse transfer capacitance	C_{res}		-	45	-	pF
Switching Characteristics						
Turn-On delay time	$t_{d(on)}$	V_{CE}=300V,Ic=40A, R_G=5Ω, V_{GE}=15V T_J=25℃ Inductive Load	-	23	-	ns
Turn-On rise time	t_r		-	31	-	ns
Turn-off delay time	$t_{d(off)}$		-	326	-	ns
Turn-off Fall time	t_f		-	206	-	ns
Turn-on energy	E_{on}		-	0.91	-	mJ
Turn-off energy	E_{off}		-	2.73	-	mJ
Total Gate Charge	Q_g	V_{CE}=200V, I_C=40A,V_{GE}=15V	-	100	-	nC
Gate to emitter charge	Q_{ge}		-	18	-	nC
Gate to collector charge	Q_{gc}		-	43	-	nC

Thermal Characteristic

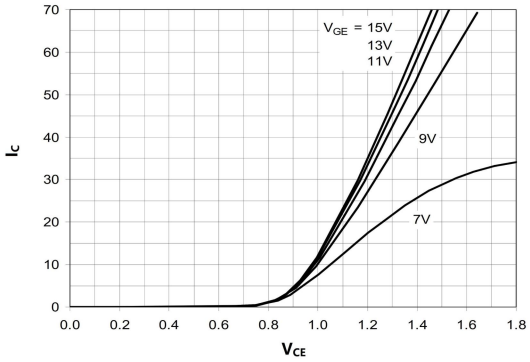
Parameter	Symbol	Max	Unit
IGBT Thermal Resistance,Junction to Case	$R_{th(j-c)}$	0.48	℃/W
Thermal Resistance,Junction to Ambient	$R_{th(j-A)}$	40	℃/W

Order Information

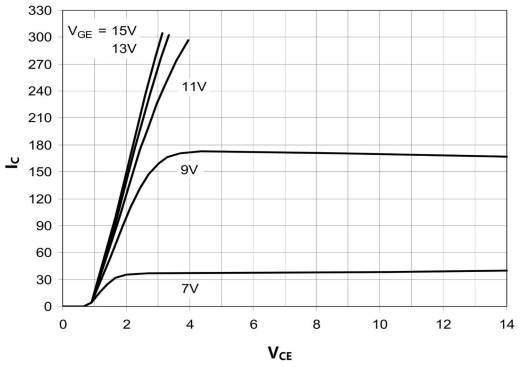
Order codes	Package	Packaging
MSG50N38HLE0	TO-263	Tube

Electrical Characteristics(curves)

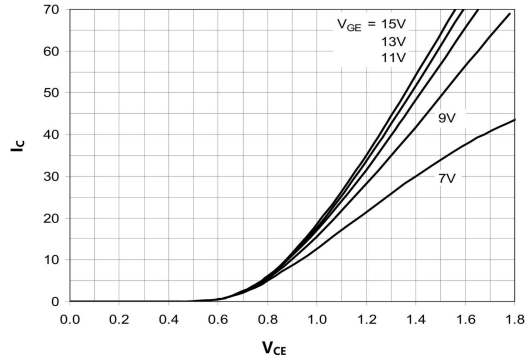
Output Characteristics @ 25ºC



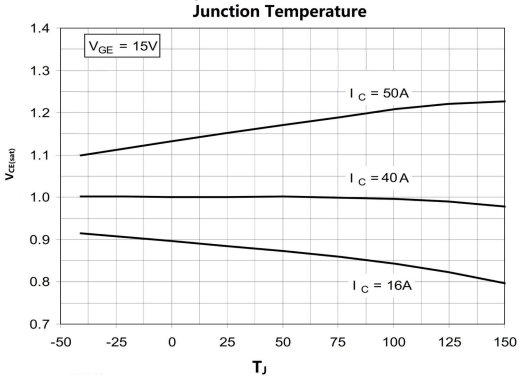
Extended Output Characteristics @ 25ºC



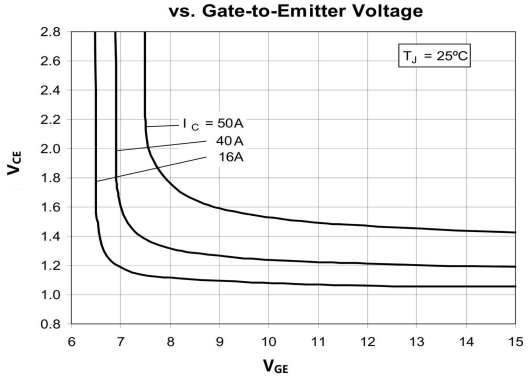
Output Characteristics @125℃



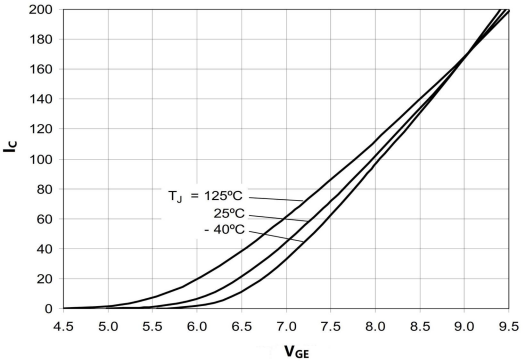
Dependence of VCE(sat) on Junction Temperature



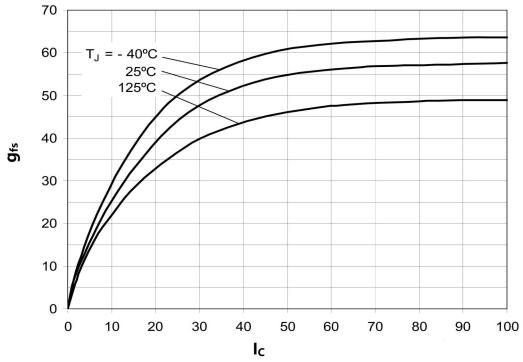
Collector-to-Emitter Voltage vs. Gate-to-Emitter Voltage



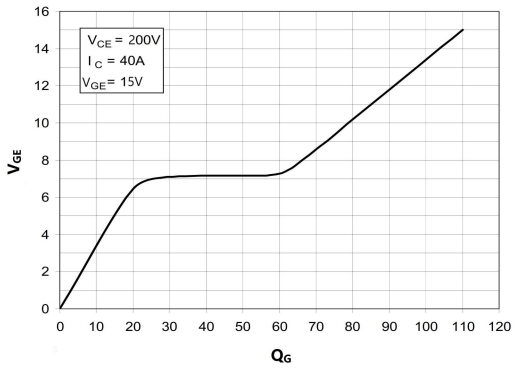
Input Admittance



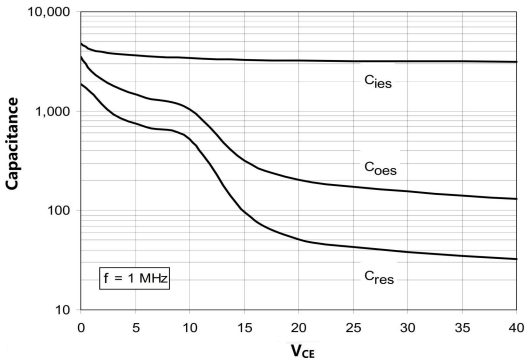
Transconductance



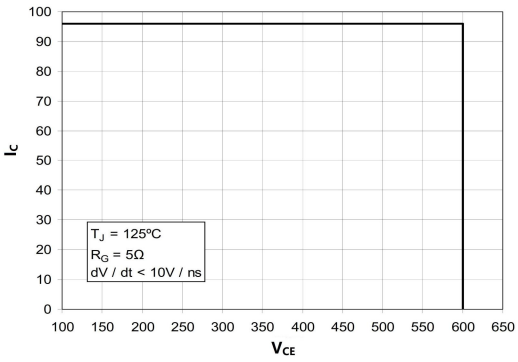
Gate Charge



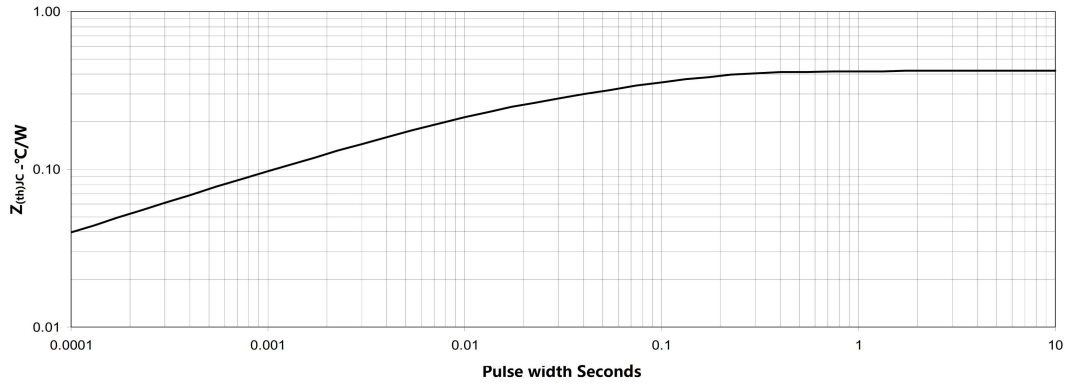
Capacitance



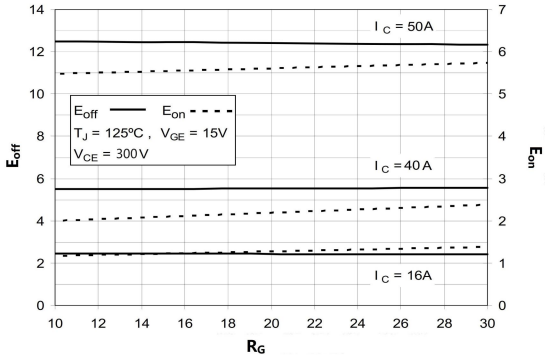
Reverse-Bias Safe Operating Area



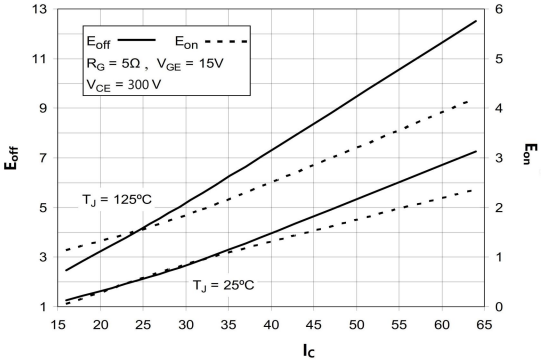
Maximum Transient Thermal Impedance



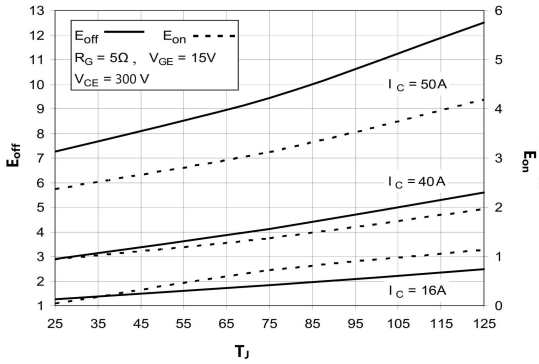
Inductive Switching Energy Loss vs. Gate Resistance



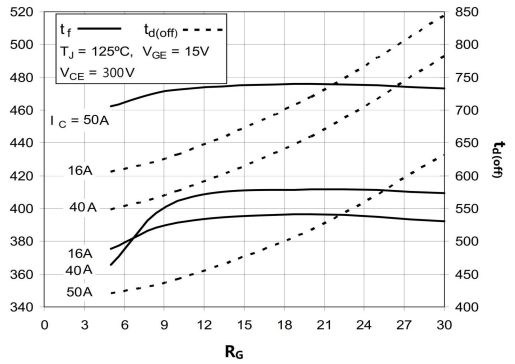
Inductive Switching Energy Loss vs. Collector Current



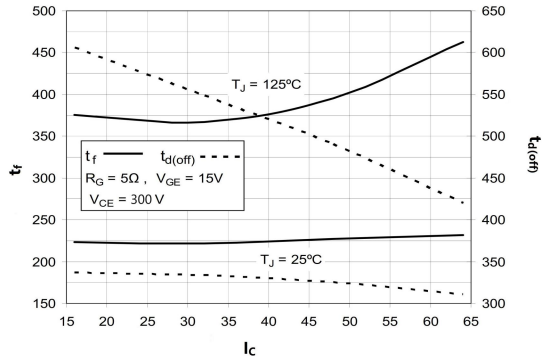
Inductive Switching Energy Loss vs. Junction Temperature



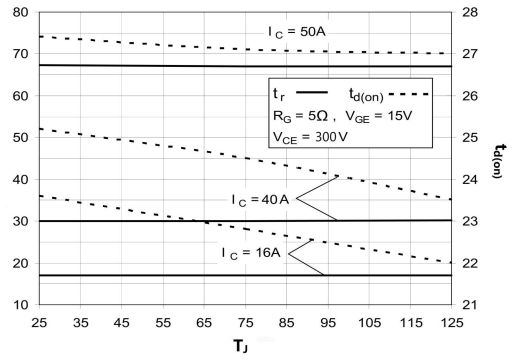
Inductive Turn-off Switching Times vs. Gate Resistance



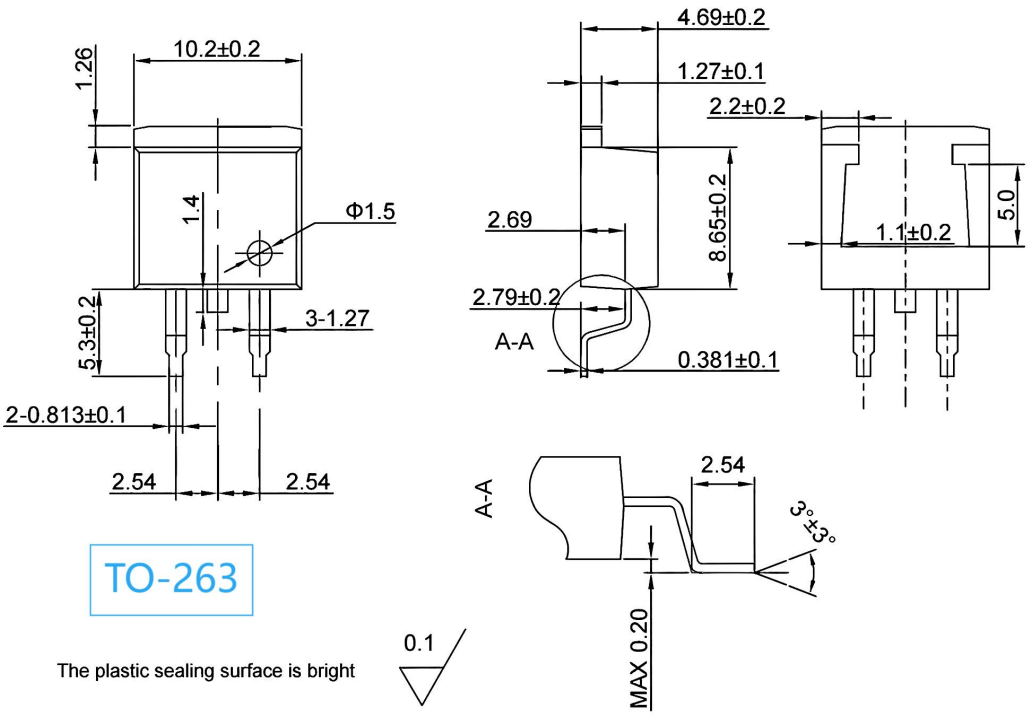
Inductive Turn-off Switching Times vs. Collector Current



Inductive Turn-on Switching Times vs. Junction Temperature



Package Mechanical DATA



Notes：

1. Unmarked tolerance±0.15mm;unmarked R<0.15mm
2. The resin body is not allowed to have defects, shrinkage holes, cracks, bubbles and other harmful defects
3. The drawing indicates that the leg has reinforcement
4. Unit : mm