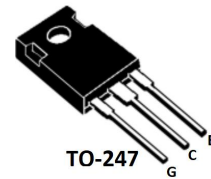


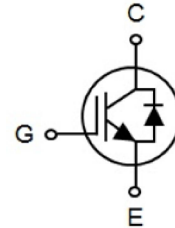
Features

- Low gate charge
 - Trench-Stop Technology
 - High speed switching
- Saturation voltage: $V_{CE(sat)}$, typ= 1.5V



Applications

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



Absolute Ratings (Tc=25°C)

Parameter	Symbol	MSG80D60FLC	Unit
Collector-Emmitter Voltage	V_{ces}	600	V
Collector Current-continuous	I_c T=25°C	180	A
		T=100°C	80
Collector Current-pulse(note 1)	I_{CM}	300	A
Gate-emitter voltage	V_{GES}	±30	V
Diode RMS forward current	I_F T=25°C	180	A
		T=100°C	80
Diode Forward Current	T=100°C	80	A
Power Dissipation	P_D Tc=25°C	260	W
Operating Temperature Range	T_J	-55~+150	°C
Storage Temperature Range	T_{STG}	-55~150	°C
Maximum Lead Temperature for Soldering Purposes	T_L	300	°C

Thermal Characteristic

Parameter	Symbol	Tests conditions	Min	Typ	Max	Units
Off-Characteristics						
Collector-Emmitter Voltage	BV_{CES}	$I_C=250\mu A, V_{GE}=0V$	600	-	-	V
Zero Gate Voltage Collector Current	I_{CES}	$V_{CE}=V_{CES}, V_{GE}=0V, T_J=125^\circ C$			25	μA
					250	
Gate-body leakage current	I_{GES}	$V_{CE}=0V, V_{GE}=\pm 20V$	-	-	±100	nA

Transconductance	gfs	$V_{CE}=10V, I_C=50A$	30	48	-	S
On-Characteristics						
Gate-Emmitter Threshold Voltage	$V_{GE(th)}$	$V_{CE}=V_{GE}, I_C=250\mu A$	3.0	-	5.0	V
Collector-Emmitter saturation Voltage	V_{CESAT}	$V_{GE}=15V, I_C=30A$		1.1	1.2	V
		$V_{GE}=15V, I_C=50A$		1.2	1.3	
		$V_{GE}=15V, I_C=80A$		1.5	1.6	
Dynamic Characteristics						
Input capacitance	C_{ies}	$V_{CE}=25V, V_{GE}=0V, f=1.0MHz$	-	3190	-	pF
Output capacitance	C_{oes}		-	175	-	pF
Reverse transfer capacitance	C_{res}		-	43	-	pF
Switching Characteristics						
Turn-On delay time	$t_d(on)$	$V_{CE}=480V, I_C=60A, R_G=5\Omega, V_{GE}=15.0V, T_J=25^\circ C$ Inductive Load	-	25	-	ns
Turn-On rise time	t_r		-	30	-	ns
Turn-off delay time	$t_d(off)$		-	334	-	ns
Turn-off Fall time	t_f		-	224	-	ns
Turn-on energy	E_{on}		-	0.95	-	mJ
Turn-off energy	E_{off}		-	2.90	-	mJ
Total Gate Charge	Q_g		-	110	-	nC
Gate to emitter charge	Q_{ge}	$V_{CE}=0.5 \cdot V_{CES}, I_C=50A, V_{GE}=15V$ (note2,3)		21		nC
Gate to collector charge	Q_{gc}			42		nC

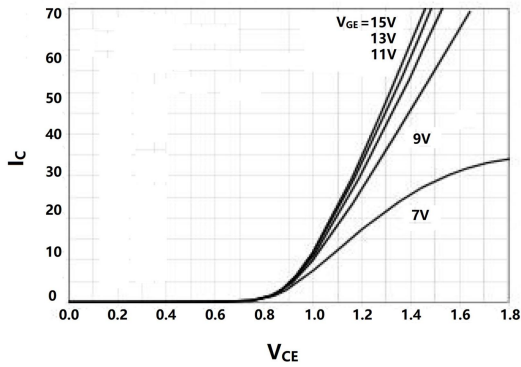
Parameter	Symbol	Max	Unit
IGBT Thermal Resistance, Junction to Case	$R_{th(j-c)}$	0.48	K/W
Diode Thermal Resistance, Junction to Case	$R_{th(j-c)}$	1.1	K/W
Thermal Resistance, Junction to Ambient	$R_{th(j-A)}$	40	K/W

Notes:

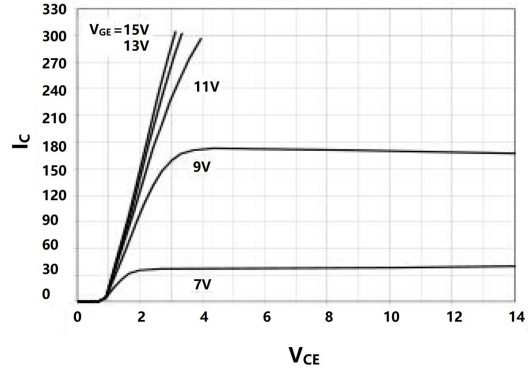
- 1: Pulse width limited by maximum junction temperature
- 2: Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$
- 3: Essentially independent of operating temperature

Electrical Characteristics (curves)

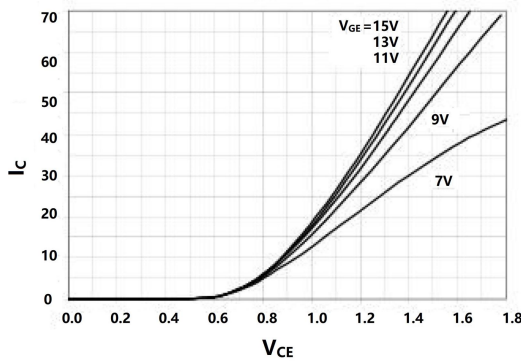
Output Characteristics @25°C



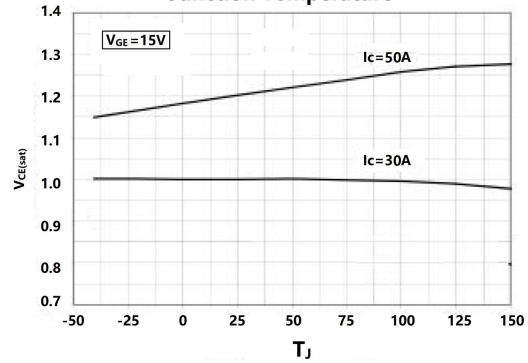
Extended Output Characteristics @25°C



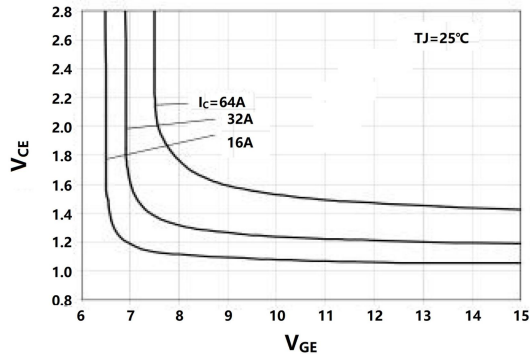
Output Characteristics @125°C



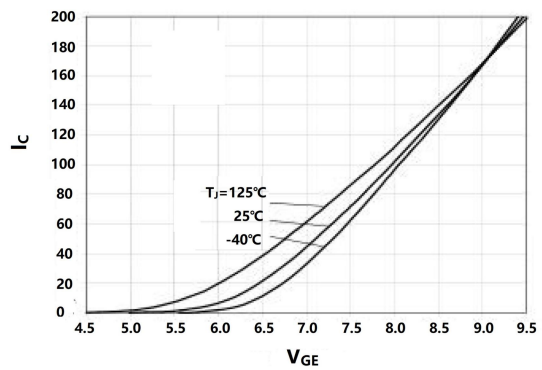
Dependence of $V_{CE(sat)}$ on Junction Temperature



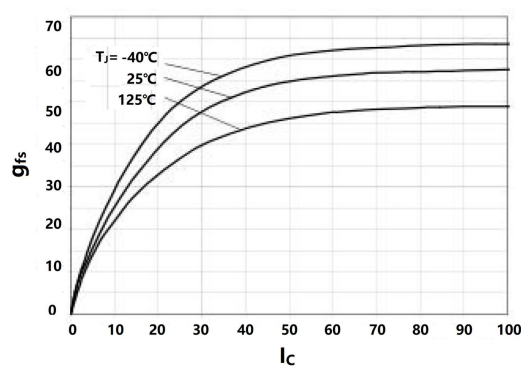
Collector to Emitter Voltage vs. Gate to Emitter Voltage



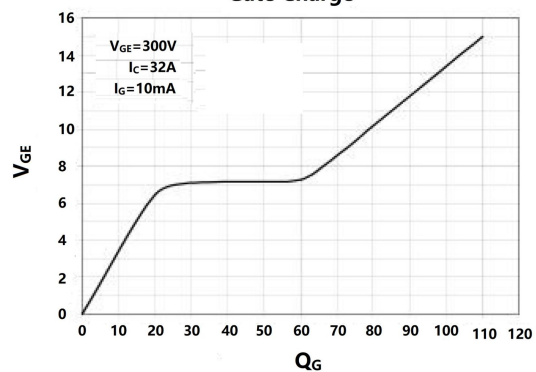
Input Admittance

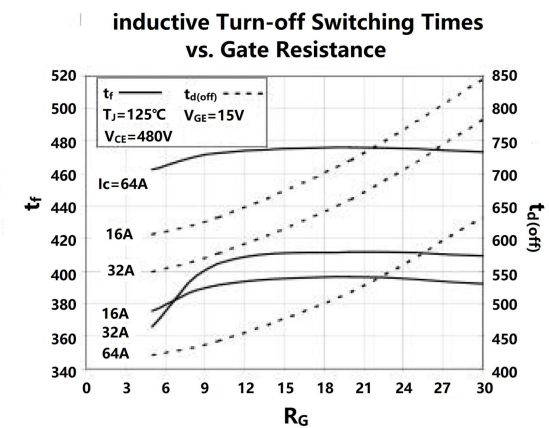
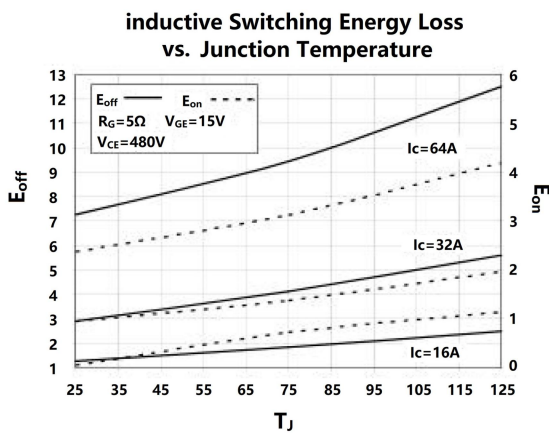
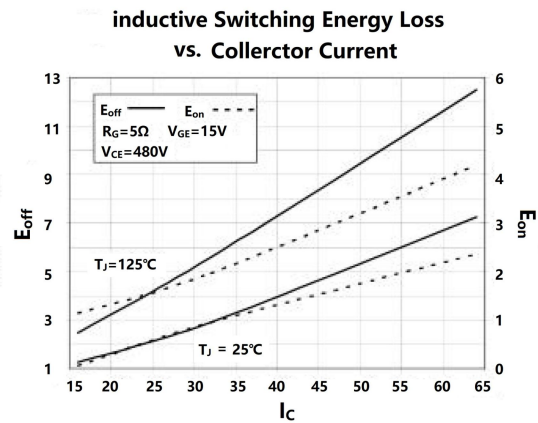
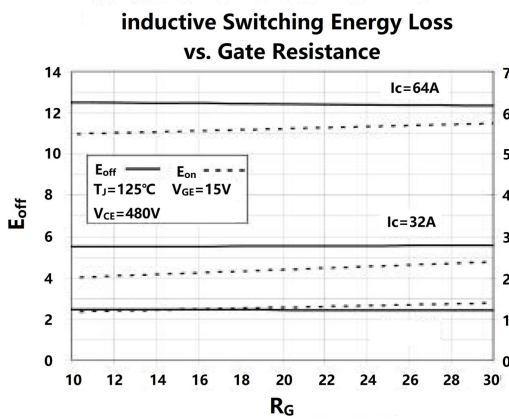
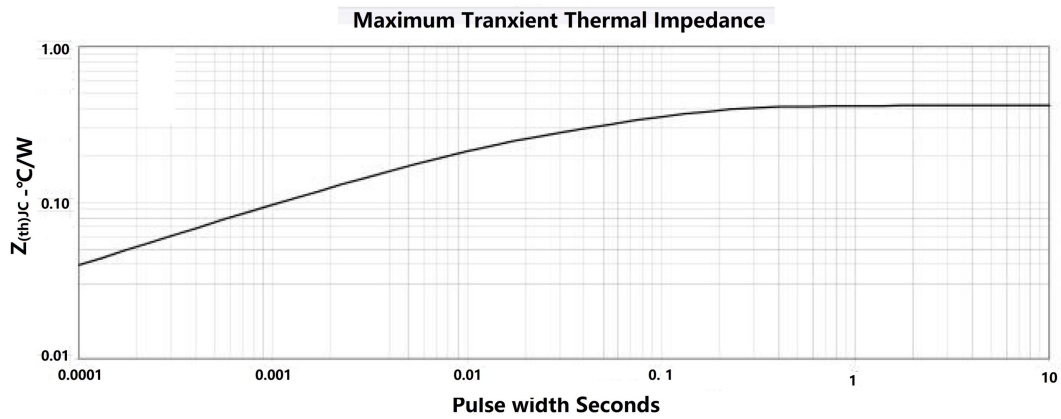
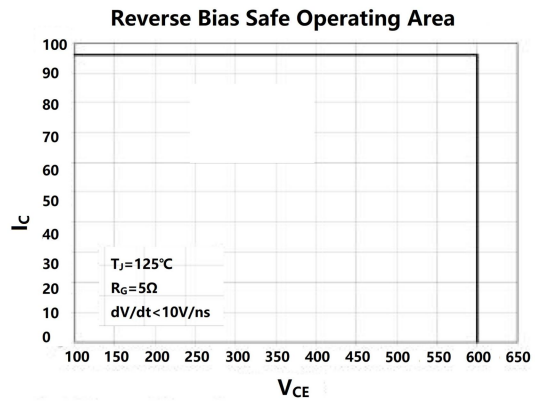
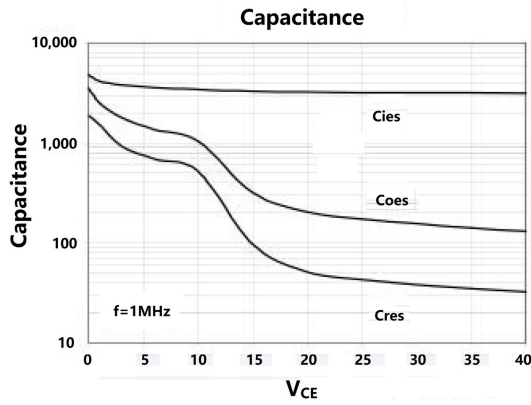


Transconductance

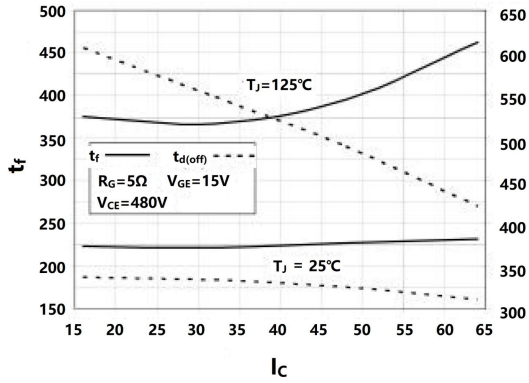


Gate Charge

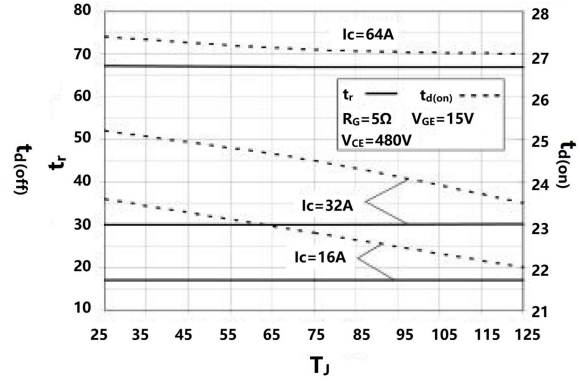




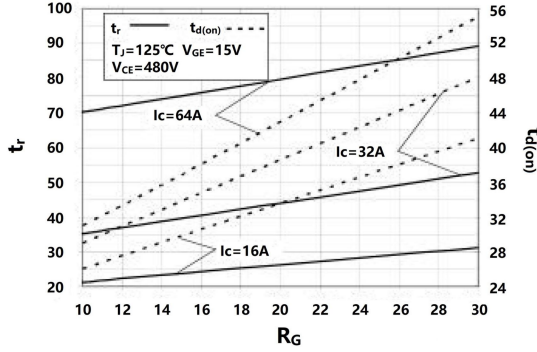
inductive Turn-off Switching Times vs. Collector Current



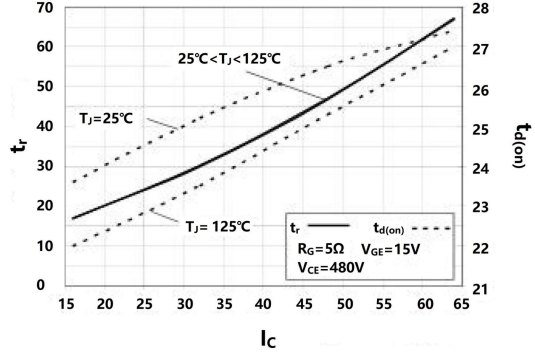
inductive Turn-on Switching Times vs. Junction Temperature



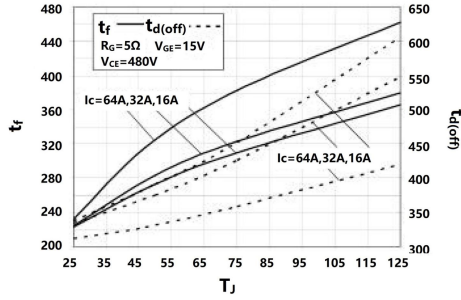
Inductive Turn-on Switching Times vs. Gate Resistance



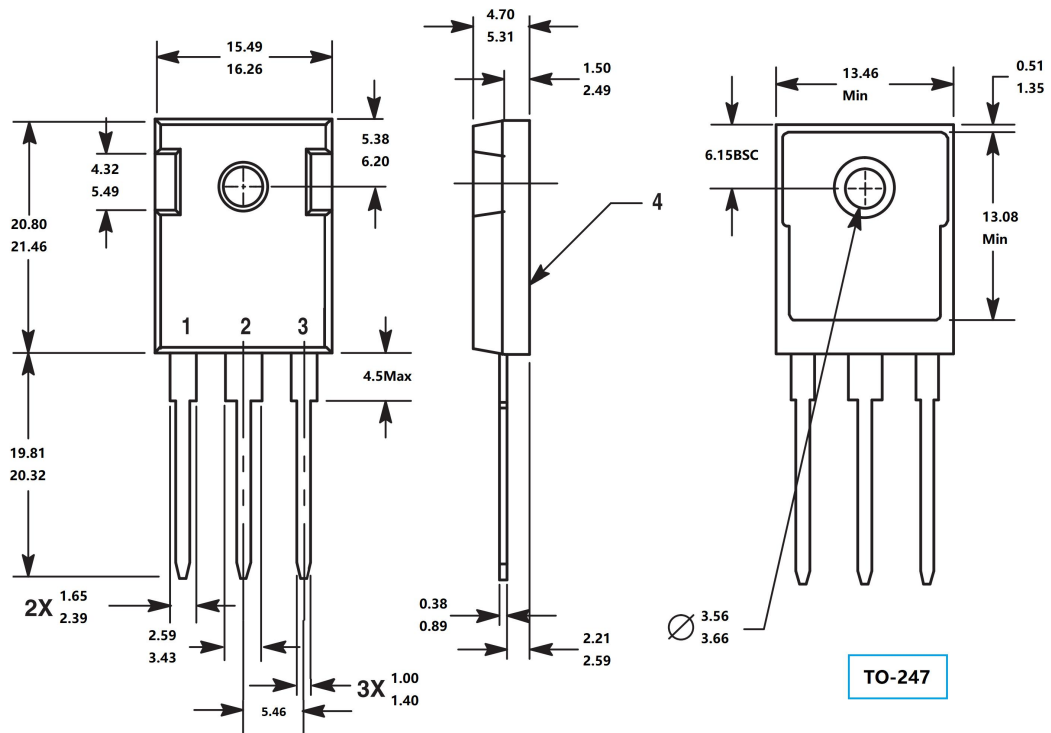
Inductive Turn-on Switching Times vs. Collector Current



Inductive Turn-on Switching Times vs. Junction Temperature



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