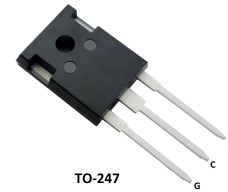


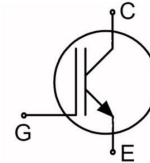
Features

- Low gate charge
- Trench-Stop Technology
- High speed switching
- Saturation voltage: $V_{CE(sat),typ} = 1.25V @ I_C=80A$ and $T_C=25^\circ C$



Applications

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



Absolute Ratings ($T_C=25^\circ C$)

Parameter	Symbol	MSG80D60FLC	Unit
Collector-Emmitter Voltage	V_{ces}	600	V
Collector Current-continuous	I_C $T_C=25^\circ C$ $T_C=100^\circ C$	80	A
		40	
Collector Current-pulse(note 1)	I_{CM}	300	A
Continuous Gate-Emmitter Voltage	V_{GE}	± 20	V
Transient Gate-emitter voltage	V_{GE}	± 30	V
Power Dissipation	P_D $T_C=25^\circ C$	260	W
Operating Temperature Range	T_J	-55~+150	$^\circ C$
Storage Temperature Range	T_{STG}	-55~150	$^\circ C$
Maximum Lead Temperature for Soldering Purposes	T_L	300	$^\circ C$

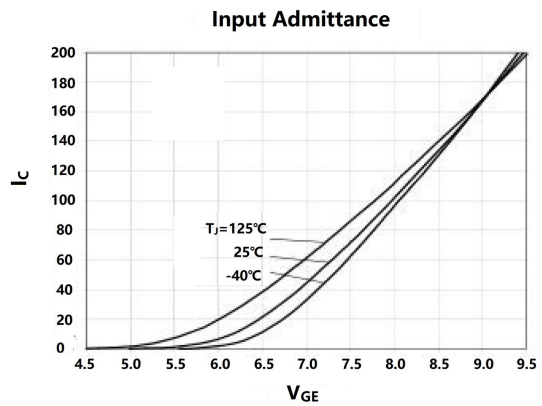
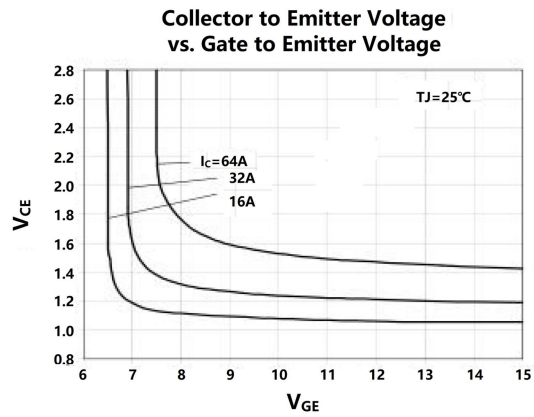
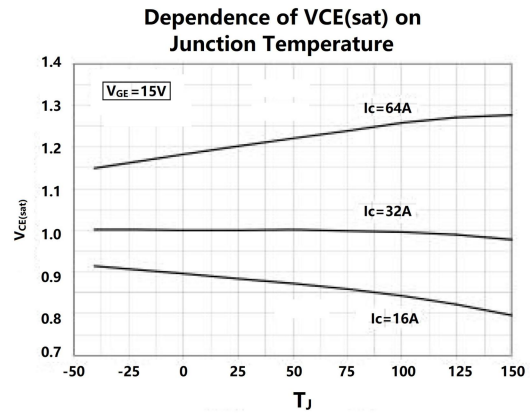
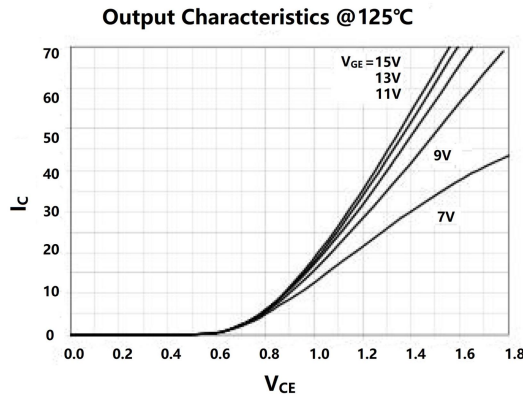
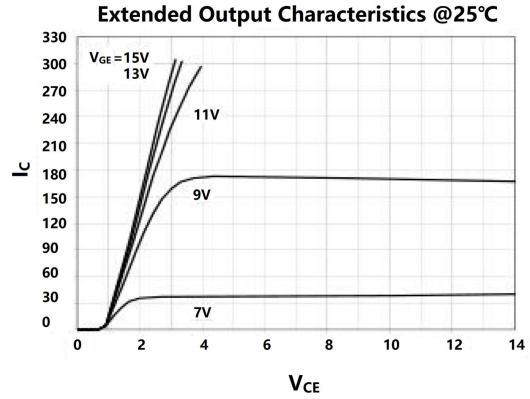
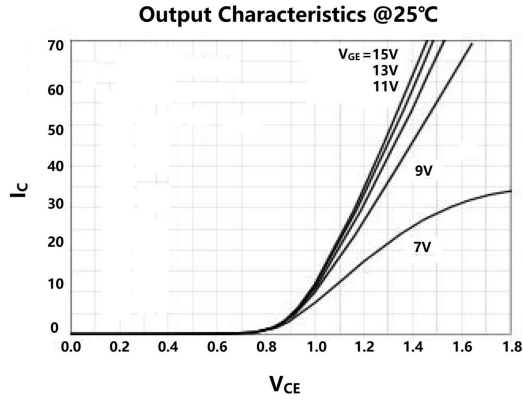
Thermal Characteristic

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

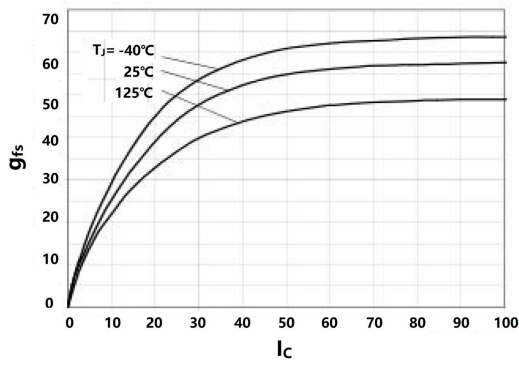
Transconductance	gfs	$V_{CE}=10V, I_C=50A$	30	48	-	S
On-Characteristics						
Gate-Emmitter Threshold Voltage	$V_{GE(th)}$	$V_{CE}=V_{GE}, I_C=250\mu A$	3.0	-	5.0	V
Collector-Emmitter saturation Voltage	V_{CESAT}	$V_{GE}=15V, I_C=80A$ (1)		1.25	1.35	V
Dynamic Characteristics						
Input capacitance	C_{ies}	$V_{CE}=25V, V_{GE}=0V, f=1.0MHz$	-	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		$V_{CE}=0.5 \cdot V_{CES}, I_C=50A, V_{GE}=15V$ (note3,4)	-	110	-
Gate to emitter charge	Q_{ge}			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
Thermal Resistance, Junction to Ambient	$R_{th(j-A)}$	40	K/W

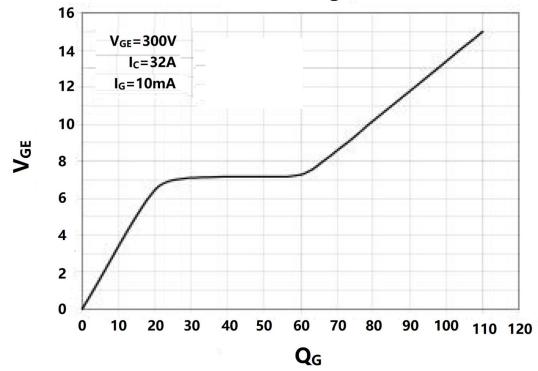
Electrical Characteristics (curves)



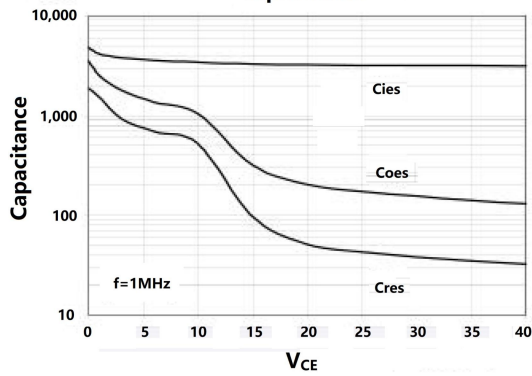
Transconductance



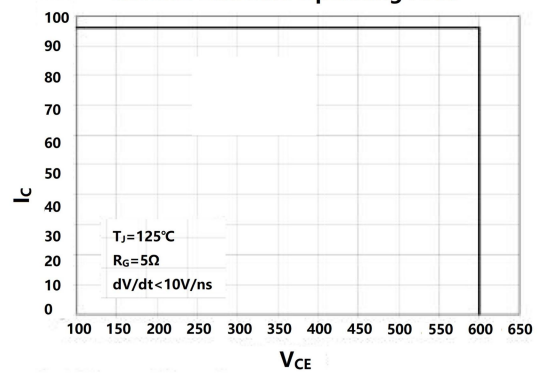
Gate Charge



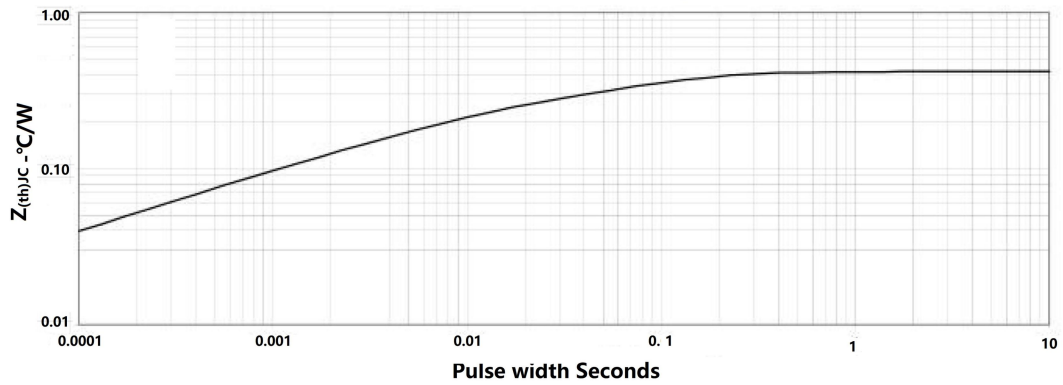
Capacitance



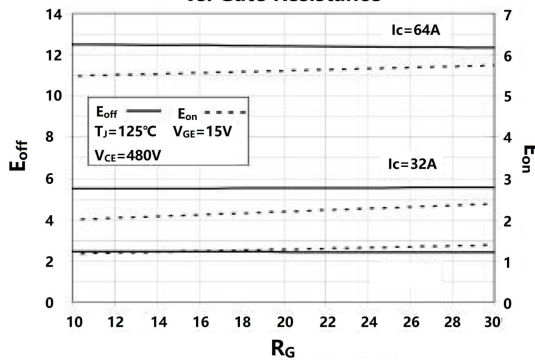
Reverse Bias Safe Operating Area



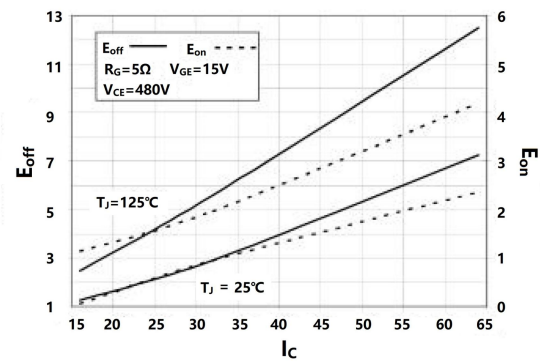
Maximum Transient Thermal Impedance



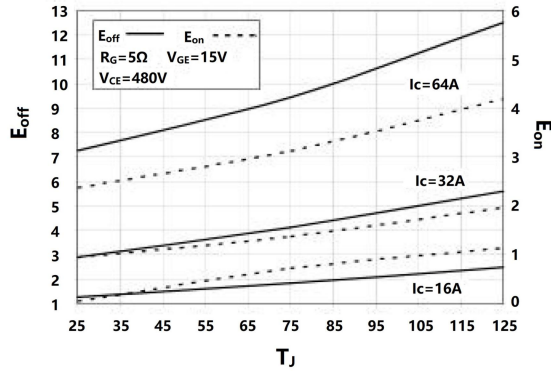
inductive Switching Energy Loss vs. Gate Resistance



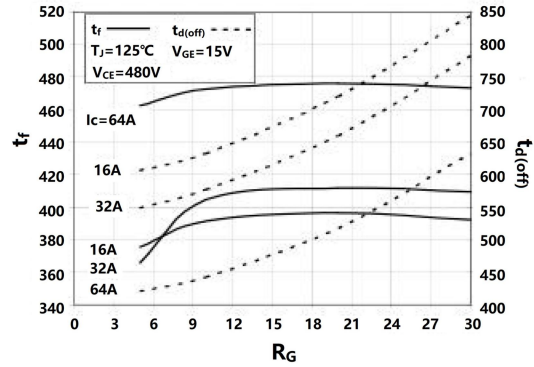
inductive Switching Energy Loss vs. Collector Current



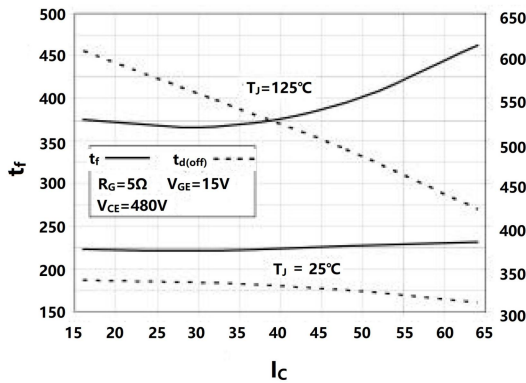
inductive Switching Energy Loss vs. Junction Temperature



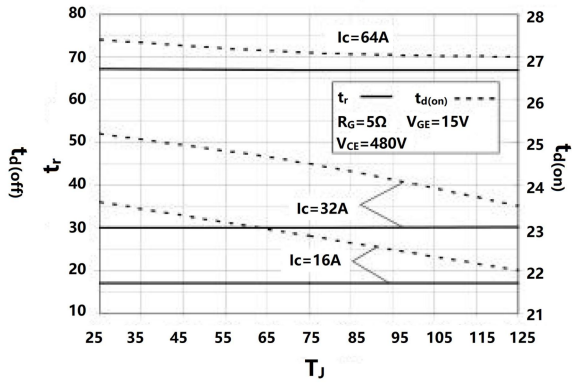
inductive Turn-off Switching Times vs. Gate Resistance



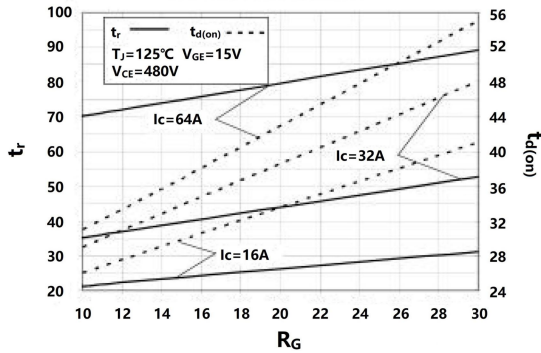
inductive Turn-off Switching Times vs. Collector Current



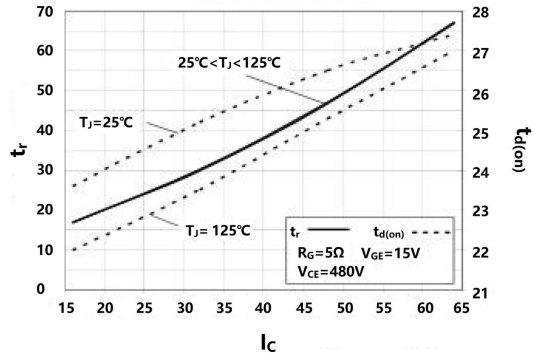
inductive Turn-on Switching Times vs. Junction Temperature



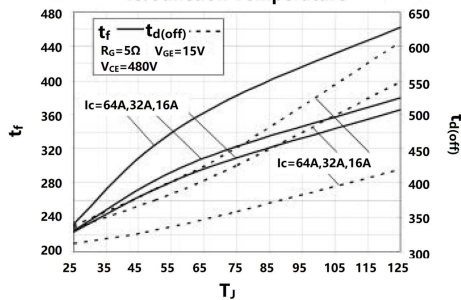
Inductive Turn-on Switching Times vs. Gate Resistance



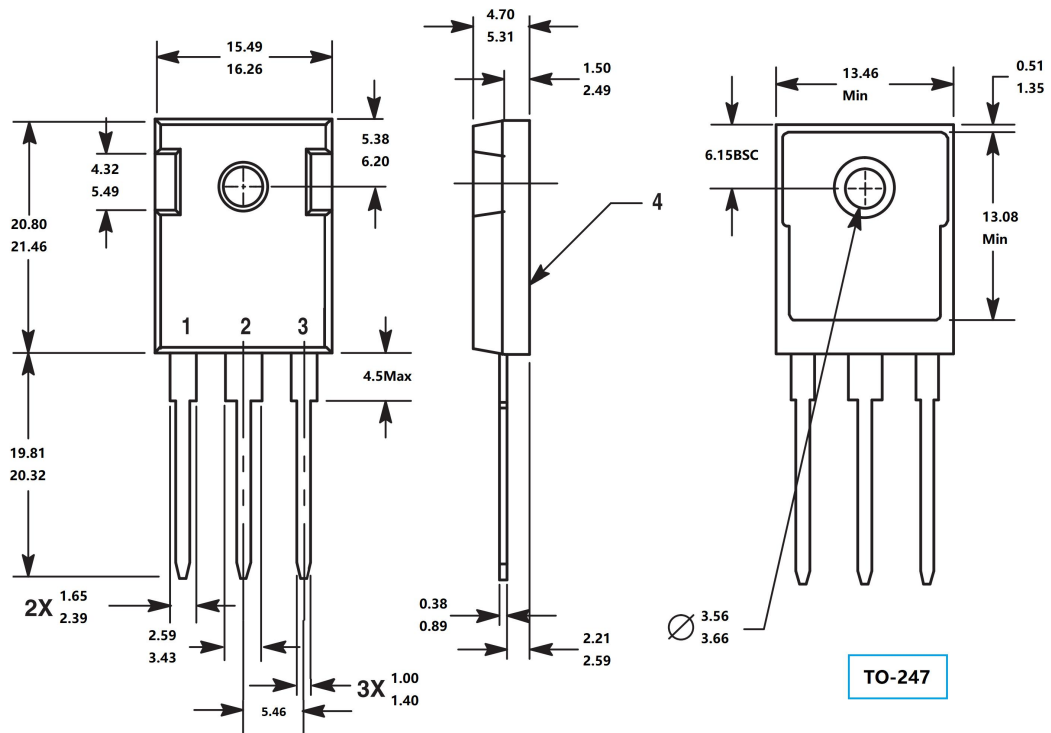
Inductive Turn-on Switching Times vs. Collector Current



Inductive Turn-on Switching Times vs. Junction Temperature



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