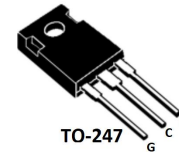


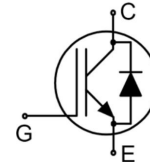
Features

- Low gate charge
- Trench-Stop Technology
- High speed switching
- Saturation voltage: $V_{CE(sat),typ} = 1.85V @ I_C=60A$ 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	MSG25T120FLC	Unit
Collector-Emmitter Voltage	V_{ces}	650	V
Collector Current-continuous	I_C $T=25^\circ C$ $T=100^\circ C$	120	A
		60	A
Diode Forward current, limited by T_{jmax}	I_F $T=25^\circ C$ $T=100^\circ C$	120	A
		60	A
Collector Current-pulse(note 1)	I_{CM}	240	A
Continuous Gate-Emmitter Voltage	V_{GE}	± 20	V
Transient Gate-emitter voltage	V_{GE}	± 30	V
Turn-off safe area	-	180	A
Power Dissipation	P_D $T_C=25^\circ C$	260	W
Diode Forward Current	$T_C=100^\circ C$	60	A
Operating Temperature Range	T_J	-40~+150	$^\circ C$
Storage Temperature Range	T_{STG}	-55~150	$^\circ C$
Maximum Lead Temperature for Soldering Purposes	T_L	260	$^\circ C$

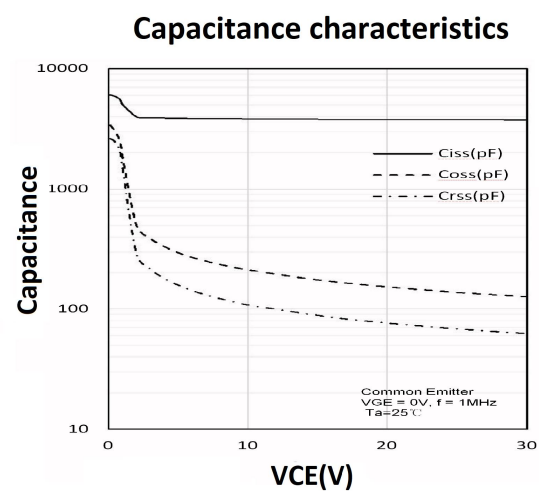
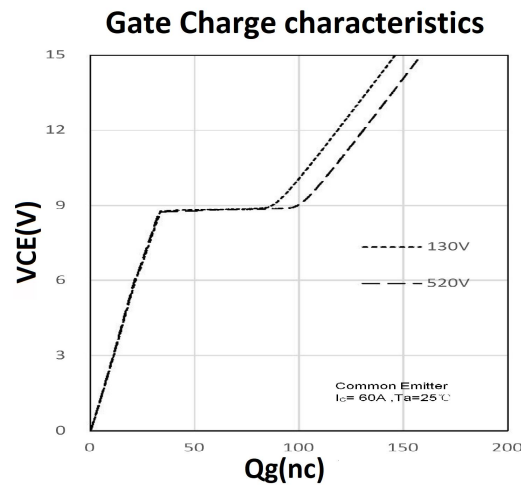
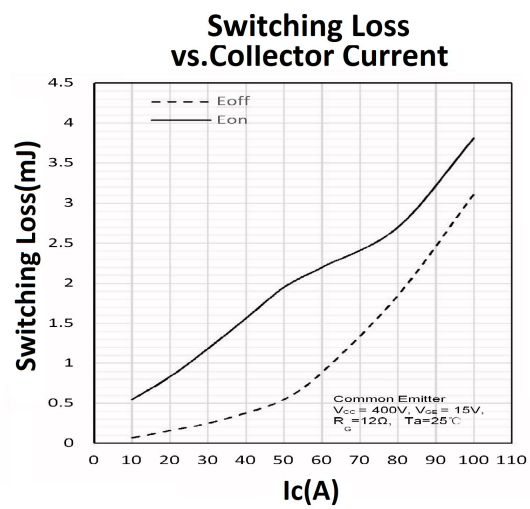
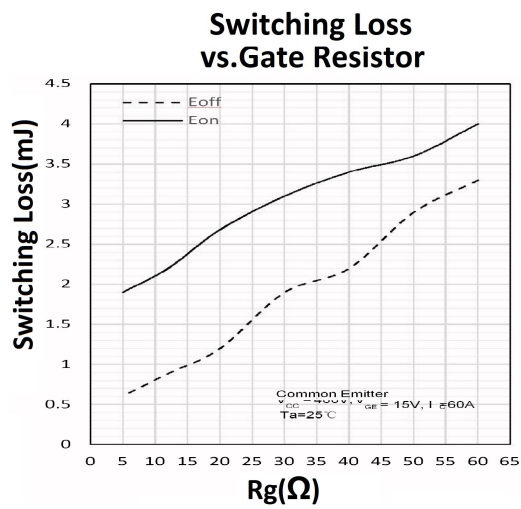
Thermal Characteristic

Parameter	Symbol	Tests conditions	Min	Typ	Max	Units
Off-Characteristics						
Collector-Emmitter Voltage	BV_{CES}	$I_C=250\mu A, V_{GE}=0V$	650	-	-	V
		$I_C=1mA, V_{GE}=0V$	650			V

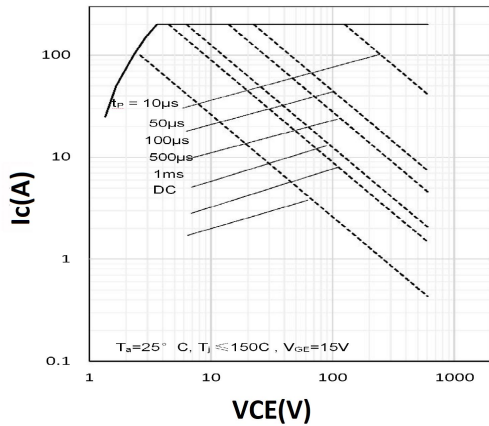
Zero Gate Voltage Collector Current	I_{CES}	$V_{CE}=650V, V_{GE}=0V,$ $T_C=25^\circ C$	-	0.1	40	μA
		$T_C=150^\circ C$	-	2.25	-	μA
Gate-body leakage current	I_{GESF}	$V_{CE}=0V, V_{GE}=\pm 20V$	-	-	100	nA
Transconductance	gfs	$V_{CE}=20V, I_C=60A$	-	52	-	S
On-Characteristics						
Gate-Emmitter Threshold Voltage	$V_{GE(th)}$	$V_{CE}=V_{GE},$ $I_C=250\mu A$	4.0	5.0	6.0	V
Collector-Emmitter saturation Voltage	V_{CESAT}	$V_{GE}=15V, I_C=60A$	-	-	-	V
		$T_C=25^\circ C$	-	1.85	2.2	
		$T_C=150^\circ C$	-	2.25	-	
Dynamic Characteristics						
Input capacitance	C_{ies}	$V_{CE}=30V,$ $V_{GE}=0V,$ $f=1.0MHz$	-	3800	-	pF
Output capacitance	C_{oes}		-	130	-	pF
Reverse transfer capacitance	C_{res}		-	70	-	pF
Switching Characteristics						
Turn-On delay time	$t_d(on)$	$V_{CC}=600V, I_C=60A,$ $R_G=12\Omega,$ $V_{GE}=0.0/15.0V$ $T_C=25^\circ C$ Inductive Load	-	56	-	ns
Turn-On rise time	t_r		-	79	-	ns
Turn-off delay time	$t_d(off)$		-	165	-	ns
Turn-off Fall time	t_f		-	81	-	ns
Turn-on energy	E_{on}		-	2.2	-	mJ
Turn-off energy	E_{off}		-	0.89	-	mJ
Total switching Energy	E_{total}		-	3.09	-	mJ
Total Gate Charge	Q_g	$V_{CE}=520V, I_C=60A,$ $V_{GE}=15V$ (note3,4)	-	158	-	nC
Anti-Paraller Diode Characteristics and Maximum Ratings						
Diode Forward Voltage	V_F	$V_{GE}=0V, I_F=60A$	-	2.9	-	V
Diode Reverse recovery time	t_{rr}	$V_{GE}=0V, V_R=300V$	-	90	-	ns
Reverse recovery charge	Q_{rr}	$I_F=40A$ $di/dt=600/us$ (note 4)	-	900	-	nC
Reverse Recovery Current	I_{rr}		-	17	-	A

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

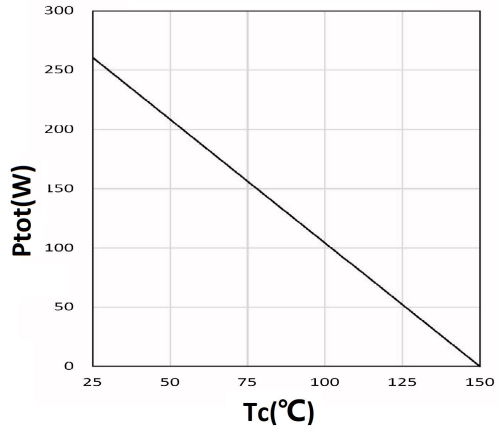
Electrical Characteristics (curves)



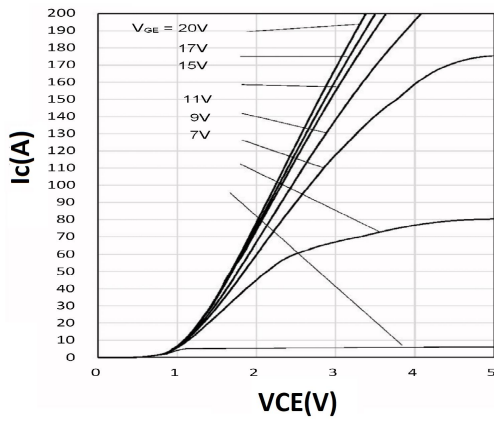
FBSOA characteristics



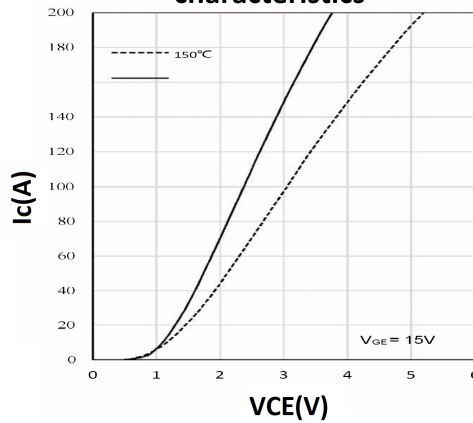
Power dissipation as a function of Tc



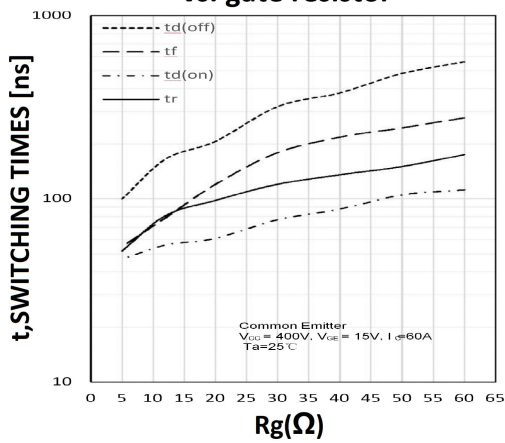
Output characteristics



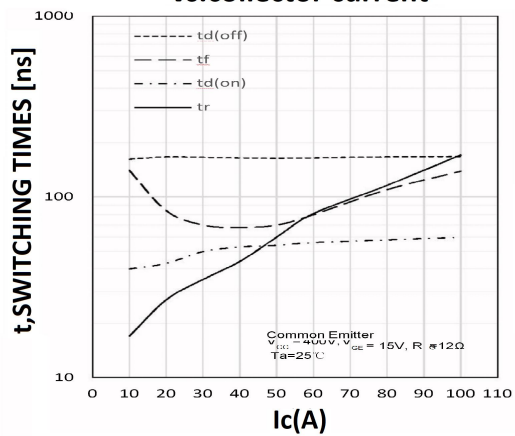
Saturation Voltage characteristics



Switching times vs. gate resistor



Switching times vs. collector current



Package Mechanical DATA

