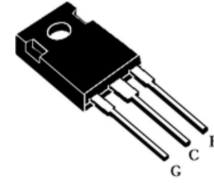


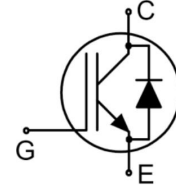
Features

- Low gate charge
- FS Technology
- Saturation voltage: $V_{CE(sat),typ}=1.45V$



Applications

- General purpose inverter
- Induction heating(IH)
- UPS



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

Parameter	Symbol	Value	Unit
Collector-Emmitter Voltage	V_{ce}	650	V
Collector Current-continuous	$I_C, T_j=25^\circ C$ $T_j=100^\circ C$	160	A
		80	A
Collector Current-pulse (note 1)	I_{CM}	300	A
Gate-Emmitter Voltage	V_{GES}	± 30	V
Diode Forward Current	$I_F, T_j=25^\circ C$ $T_j=100^\circ C$	160	A
		80	A
Power Dissipation	PD $T_c=25^\circ C$	260	W
Operating and Storage Temperature Range	T_J, T_{STG}	-55~+150	$^\circ C$
Maximum Lead Temperature for Soldering Purposes	T_L	300	$^\circ C$

Electrical Characteristics

Parameter	Symbol	Tests conditions	Min	Typ	Max	Units
Off-Characteristics						
Collector - Emitter Voltage	BV_{CES}	$I_c=250\mu A, V_{GE}=0V$	650	-	-	V
Zero Gate Voltage Collector Current	I_{CES}	$V_{CE}=650V, V_{GE}=0V$	-	-	0.2	mA
Gate-body leakage current, forward	I_{GESF}	$V_{CE}=0V, V_{GE}=20V$	-	-	200	nA
Gate-body leakage	I_{GESR}	$V_{CE}=0V, V_{GE}=-20V$	-	-	-200	nA

current, reverse						
On-Characteristics						
Gate Threshold Voltage	$V_{GE(th)}$	$V_{CE}=V_{GE}, I_c=250\mu A$	3.5	-	6.5	V
Collector - Emitter saturation Voltage	V_{CESAT}	$V_{GE}=15V, I_c=70A$ $T_c=25^\circ C$	-	1.45	-	V
Dynamic Characteristics						
Input capacitance	C_{ies}	$V_{CE}=25V,$ $V_{GE}=0V,$ $f=1.0MHz$	-	3300	-	pF
Output capacitance	C_{oes}		-	180	-	pF
Reverse transfer capacitance	C_{res}		-	43	-	pF

Electrical Characteristics

Parameter	Symbol	Tests conditions	Min	Typ	Max	Units
Switching Characteristics						
Turn-on delay time	$t_{d(on)}$	$V_{CE}=480V, I_c=80A,$ $R_G=5\Omega$ $T_c=25^\circ C$ Inductive Load	-	25	-	ns
Turn-On rise time	t_r		-	30	-	ns
Turn-Off delay time	$t_{d(off)}$		-	340	-	ns
Turn-Off Fall time	t_f		-	230	-	ns
Turn-on energy	E_{on}		-	0.98	-	mJ
Turn-off energy	E_{off}		-	3	-	mJ
Total Gate Charge	Q_g	$V_{CE}=300V,$ $I_c=50A$ $V_{GE}=15V$ (note 3,4)	-	110		nC
Gate to emitter charge	Q_{ge}		-	20	-	nC
Gate to Collector charge	Q_{gc}		-	42	-	nC
Anti-Parallel Diode Characteristics and Maximum Ratings						
Drain-Source Diode Forward Voltage	V_F	$V_{GE}=0V, I_F=50A$	-	1.55	-	V
Diode Reverse recovery time	t_{rr}	$V_{GE}=0V, V_R=480V$ $I_F=80A$ $di/dt=600A/\mu s$ (note 4)	-	75	-	ns
Reverse recovery charge	Q_{rr}		-	664	-	nC
Reverse recovery Current	I_{rr}		-	16	-	A

Thermal Characteristic

Parameter	Symbol	Max	Unit
Thermal Resistance, Junction to Case	Rth(j-c)	0.23	°C/W
Thermal Resistance, Junction to Ambient	Rth(j-A)	33	°C/W

Order Message

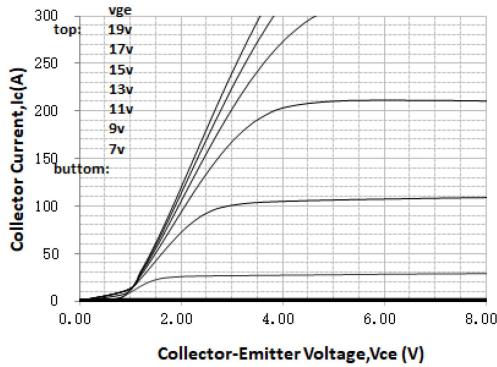
Order codes	Marking	Package
MSG80T65HHC0	MSG80T65HHC0	TO-247

Notes:

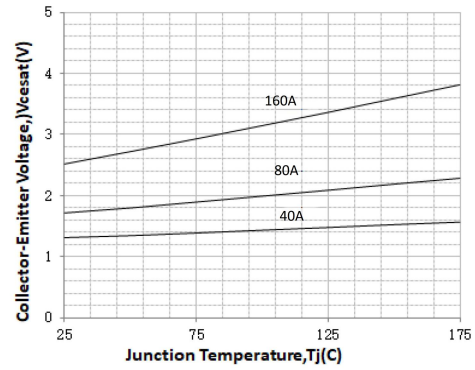
- 1: Pulse width limited by maximum junction temperature
- 2: Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$
- 3: Essentially independent of operating temperature

Electrical Characteristics (curves)

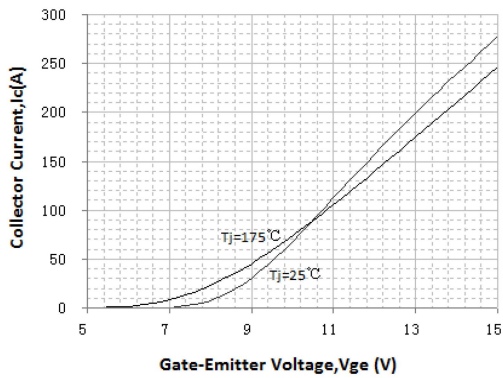
Output Characteristics (25°C)



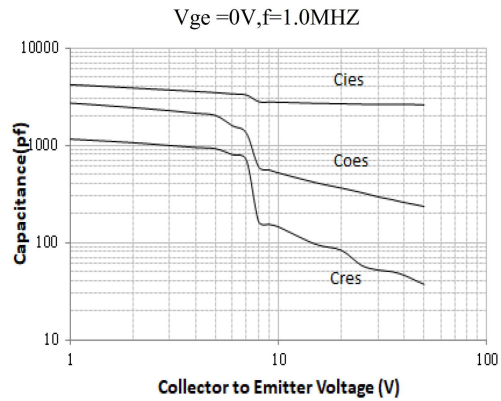
VCEsat vs. Tj



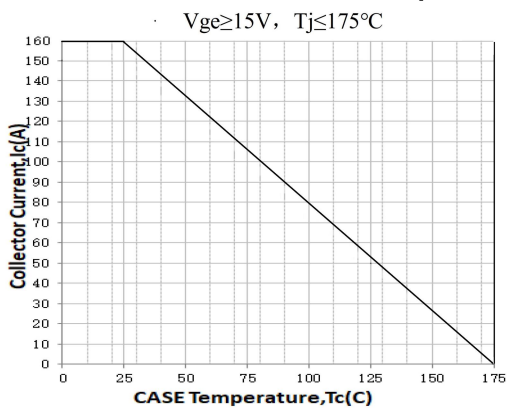
Transfer Characteristics



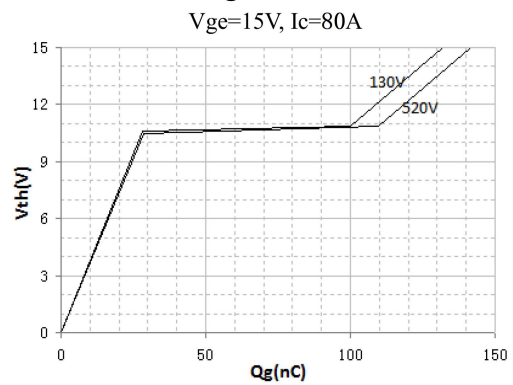
Capacitance Characteristic



Collector current vs. case temperature

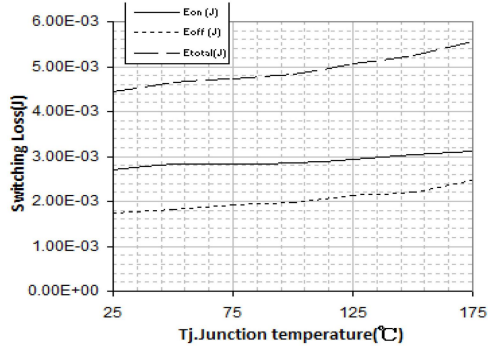


Gate Charge Characteristics



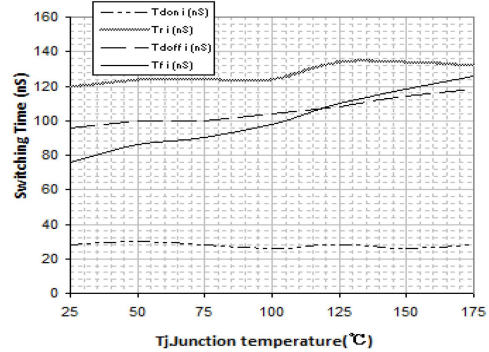
Switching Loss vs. Tj

Vge=15V, Vce=400V, Ic=80A, Rg=5Ω



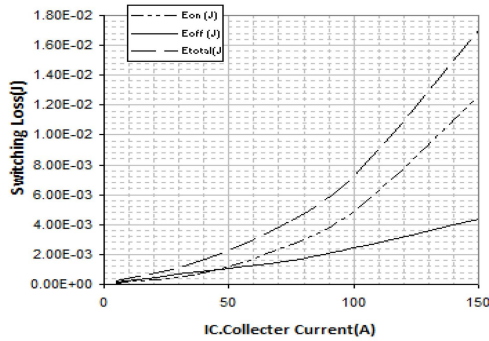
Switching Time vs. Tj

Vge=15V, Vce=400V, Ic=80A, Rg=5Ω

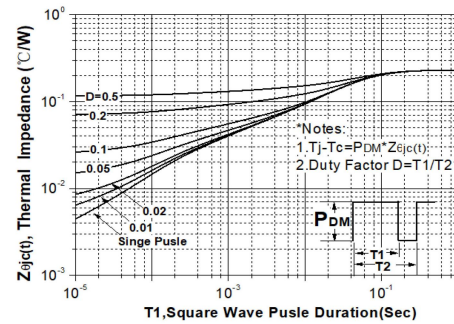


Switching Loss vs. IC

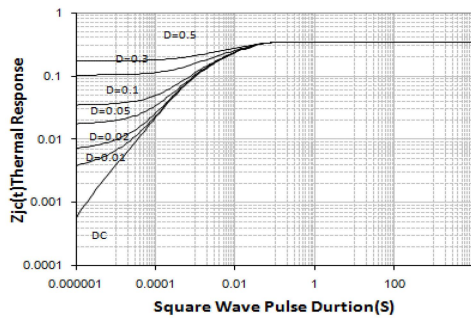
Vce=400V, Vge=15V, Rg=5Ω



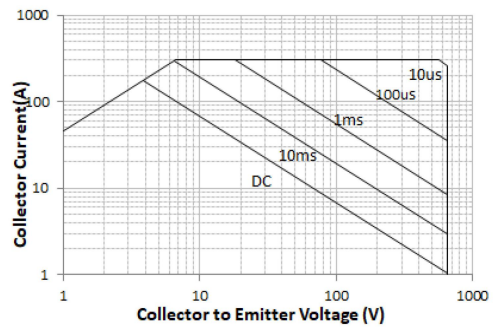
Transient Thermal Impedance for IGBT



Transient Thermal Impedance for FRD



Safe Operating Area



Package Mechanical DATA

