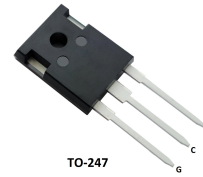


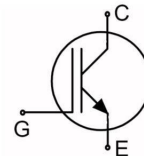
Features

- Low gate charge
- Trench FS Technology
- Fast switching speed
- Low switching losses
- No reverse fast recovery diode
- RoHS product



Applications

- Charging pile
- UPS
- Solar converters



Absolute Ratings($T_c=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	conditions	Value	Unit
Collector-Emitter Voltage	V_{ce}		650	V
Collector Current-continuous	I_c	$T=25^{\circ}\text{C}$	150	A
		$T=100^{\circ}\text{C}$	75	A
Collector Current-pulse (note 1)	I_{CM}		300	A
Gate-Emitter Voltage	V_{GES}		± 20	V
Power Dissipation	P_D	$T_c=25^{\circ}\text{C}$	625	W
Operating Temperature Range	T_J		$-40\sim+175$	$^{\circ}\text{C}$
Storage Temperature Range	T_{STG}		$-55\sim+150$	$^{\circ}\text{C}$
Maximum Lead Temperature for Soldering Purposes	T_L		260	$^{\circ}\text{C}$

Electrical Characteristics

Parameter	Symbol	Tests conditions	Min	Typ	Max	Units
Off-Characteristics						
Collector-Emitter Voltage	BV_{CES}	$I_C=250\mu\text{A}, V_{GE}=0\text{V}$ (note 2)	650	-	-	V
Zero Gate Voltage Collector Current	I_{CES}	$V_{CE}=650\text{V}, V_{GE}=0\text{V}$	-	-	80	μA

Gate-body leakage current, forward	I_{GESF}	$V_{CE}=0V, V_{GE}=20V$	-	-	200	nA
Gate-body leakage current, reverse	I_{GESR}	$V_{CE}=0V, V_{GE}=-20V$	-	-	-200	nA
On-Characteristics						
Gate Threshold Voltage	$V_{GE(th)}$	$V_{CE}=V_{GE}, I_c=250\mu A$	4.0	-	5.0	V
Collector-Emitter saturation Voltage	V_{CESAT}	$V_{GE}=15V, I_c=50A$ $T_c=25^\circ C$	-	1.3	1.5	V
Dynamic Characteristics						
Input capacitance	C_{ies}	$V_{CE}=25V,$ $V_{GE}=0V,$ $f=1.0MHz$	-	3650	-	pF
Output capacitance	C_{oes}		-	320	-	pF
Reverse transfer capacitance	C_{res}		-	63	-	pF

Electrical Characteristics

Parameter	Symbol	Tests conditions	Min	Typ	Max	Units
Switching Characteristics						
Turn-on delay time	$t_{d(on)}$	$V_{CE}=400V, I_c=75A,$ $R_G=5\Omega$ $T_c=25^\circ C$	-	26	-	ns
Turn-On rise time	t_r		-	120	-	ns
Turn-Off delay time	$t_{d(off)}$		-	95	-	ns
Turn-Off Fall time	t_f		-	80	-	ns
Turn-on energy	E_{on}		-	2.8	-	mJ
Turn-off energy	E_{off}		-	1.5	-	mJ
Total switching energy	E_{total}		-	4.3	-	mJ
Turn-on delay time	$t_{d(on)}$	$V_{CE}=400V, I_c=75A,$ $R_G=5\Omega$ $T_c=175^\circ C$	-	28	-	ns
Turn-On rise time	t_r		-	131	-	ns
Turn-Off delay time	$t_{d(off)}$		-	120	-	ns
Turn-Off Fall time	t_f		-	125	-	ns
Turn-on energy	E_{on}		-	4.0	-	mJ
Turn-off energy	E_{off}		-	1.8	-	mJ
Total switching energy	E_{total}		-	5.8	-	mJ
Total Gate Charge	Q_g	$V_{CE}=520V,$ $I_c=75A$ $V_{GE}=15V$	-	140	-	nC
Gate to emitter Charge	Q_{ge}		-	28	-	nC
Gate to collector Charge	Q_{gc}		-	80	-	nC

Thermal Characteristics

Parameter	Symbol	Max	Unit
Junction to Ambient	$R_{th(j-A)}$	40	$^{\circ}\text{C}/\text{W}$
Junction to Case IGBT	$R_{th(j-c)}$	0.24	$^{\circ}\text{C}/\text{W}$

Order Message

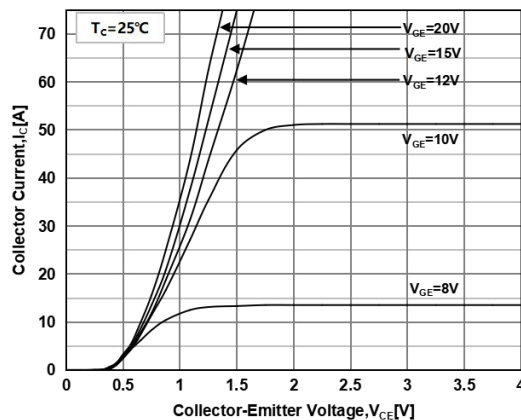
Order codes	Marking	Package
MSG75D65HFC0	MSG75D65HFC0	TO-247

Notes:

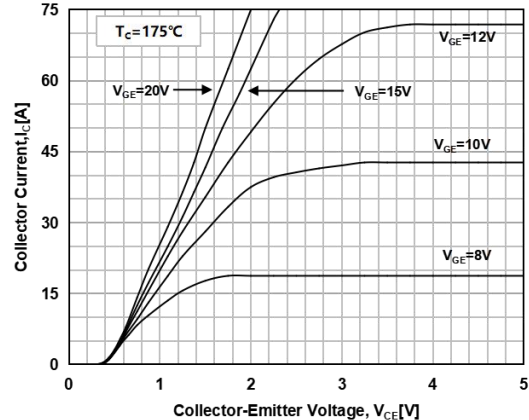
1. Pulse width limited by maximum junction temperature
2. It needs to be tested with a reverse quick recovery diode, or it will damage the IGBT

Electrical Characteristics(curves)

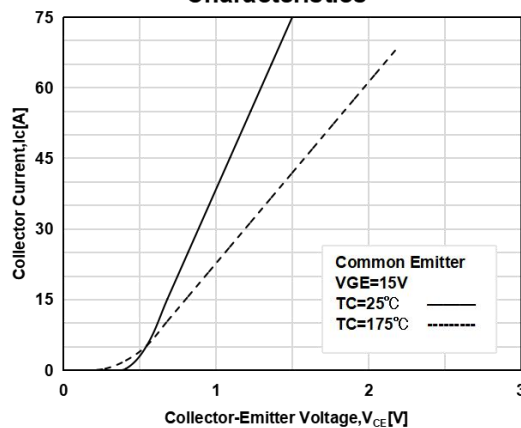
Typical Output Characteristics



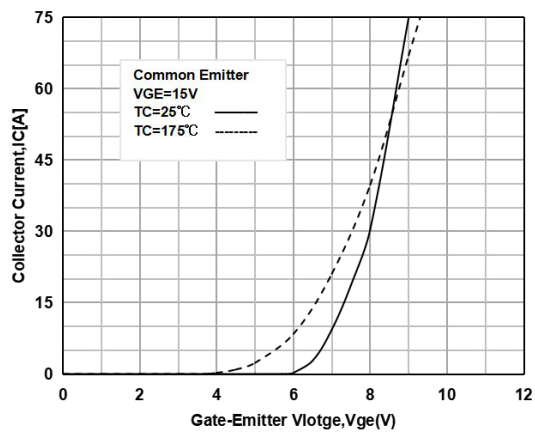
Typical Output Characteristics

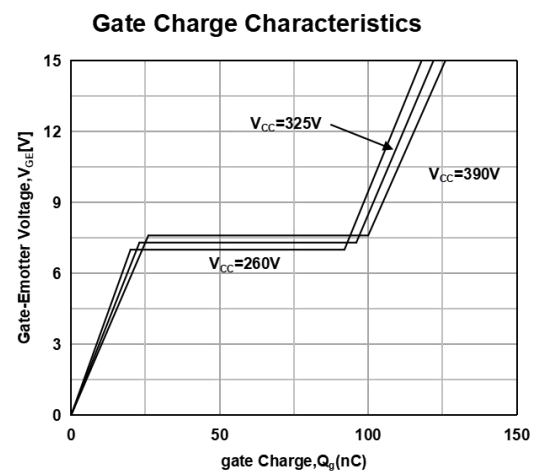
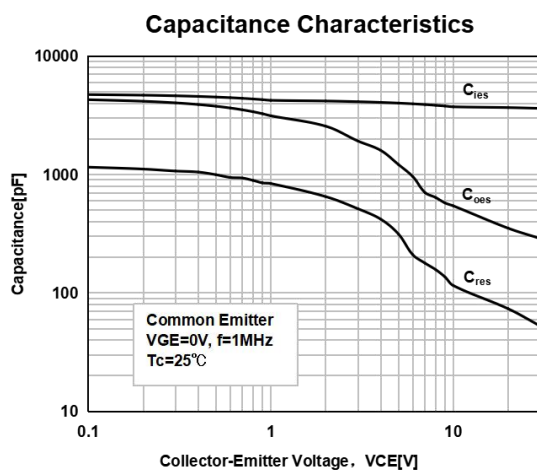
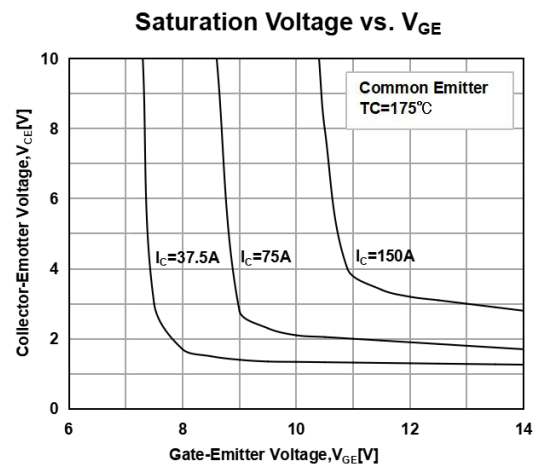
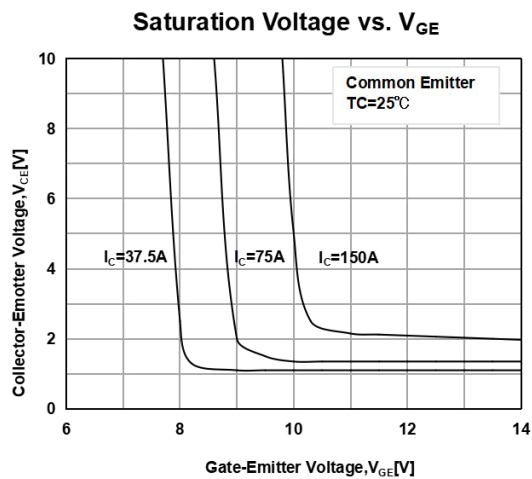
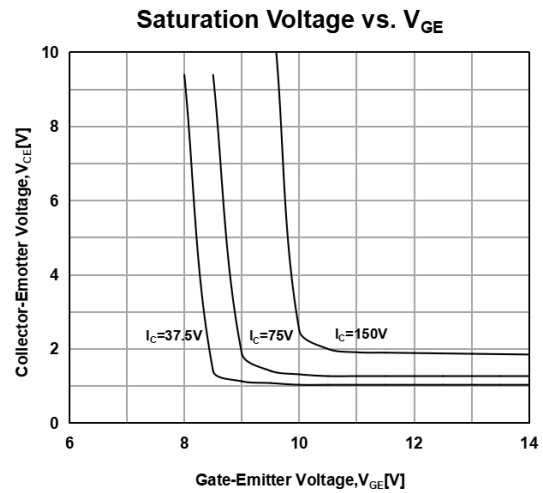
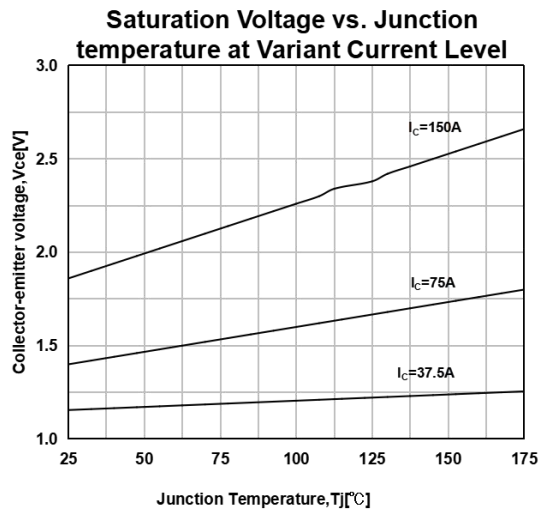


Typical Saturation Voltage Characteristics

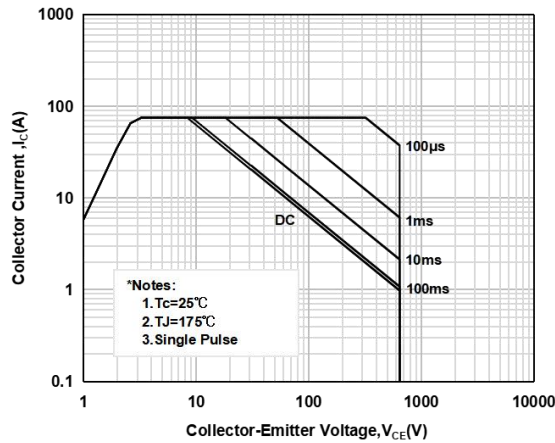


Transfer Characteristics

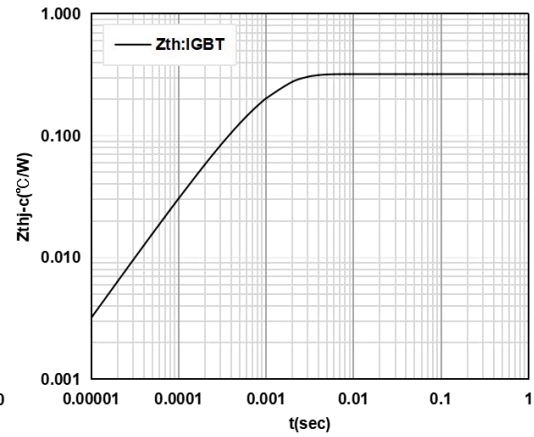




Forward Bias Safe Operating Area

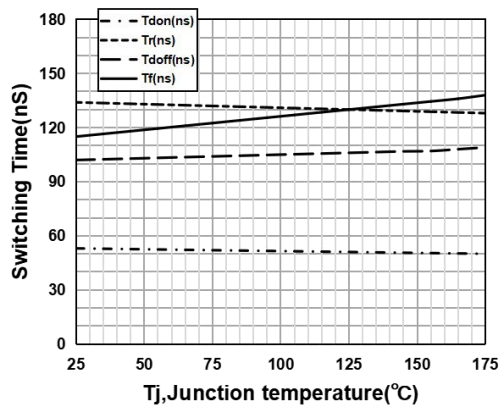


Transient Thermal Impedance



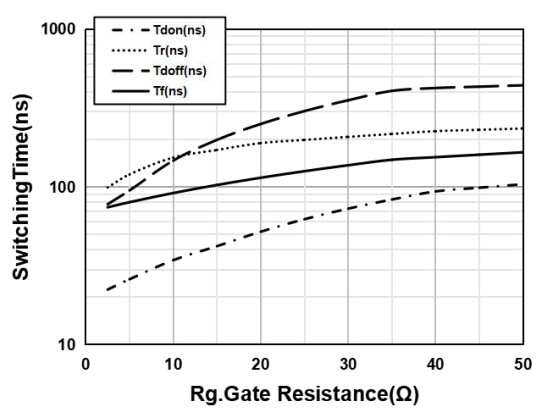
Switching Time vs. T_J

$V_{ge}=15\text{V}, V_{ce}=400\text{V}, I_C=75\text{A}, R_g=5\Omega$



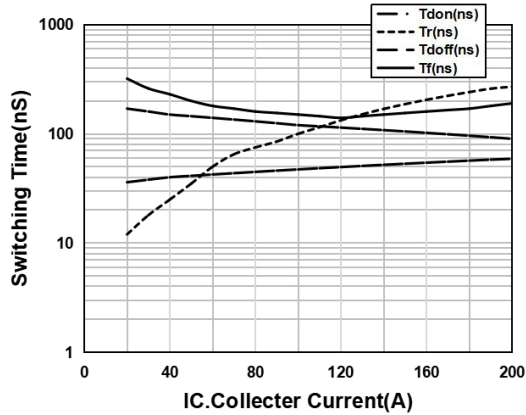
Switching Time vs. $R_g(175^\circ\text{C})$

$V_{ge}=15\text{V}, V_{ce}=400\text{V}, I_C=75\text{A}$



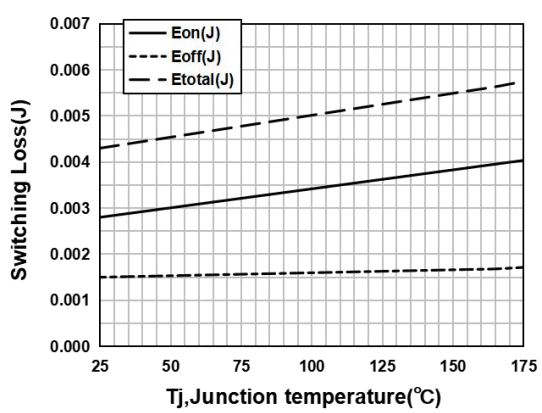
Switching Time vs. $I_C(175^\circ\text{C})$

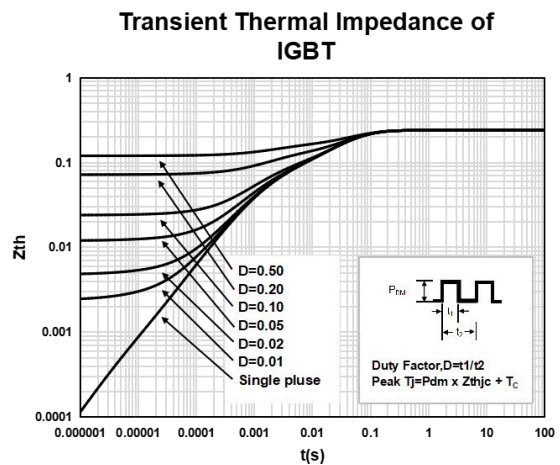
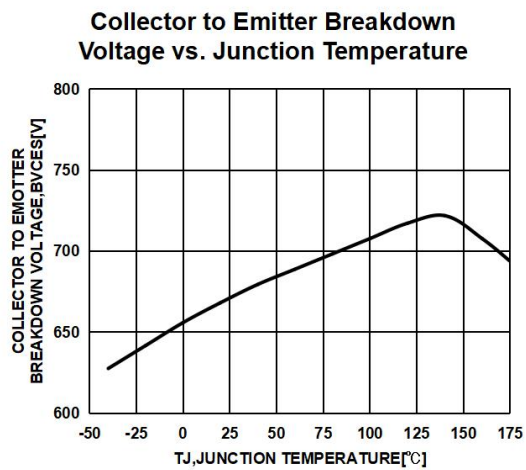
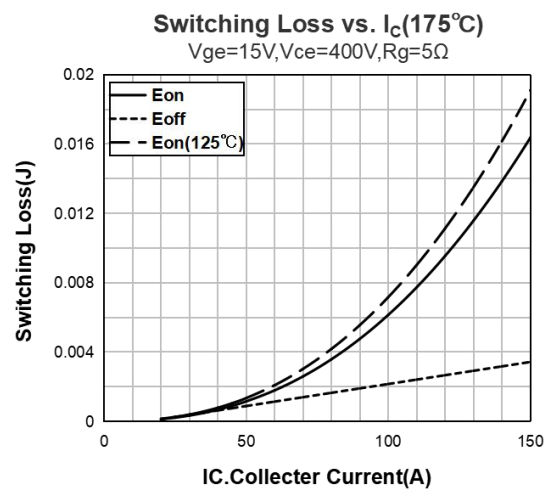
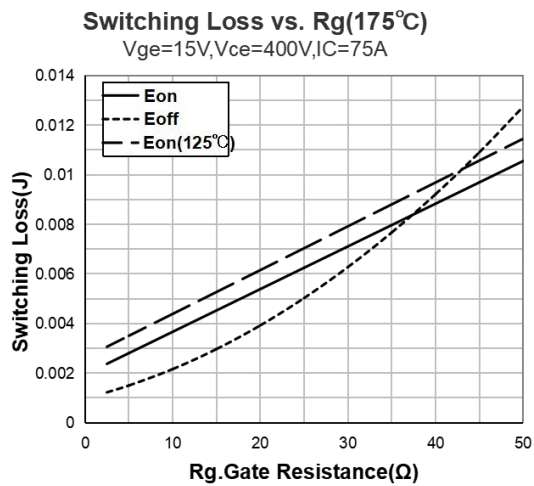
$V_{ce}=400\text{V}, V_{ge}=15\text{V}, R_g=5\Omega$



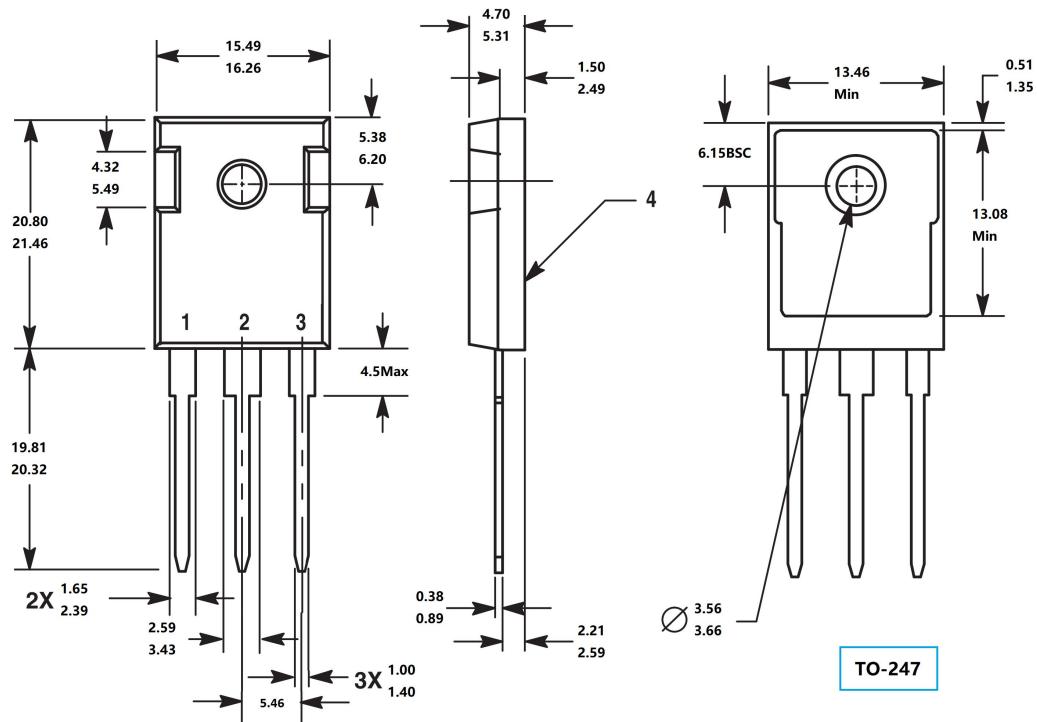
Switching Loss vs. T_J

$V_{ge}=15\text{V}, V_{ce}=400\text{V}, I_C=75\text{A}, R_g=5\Omega$





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