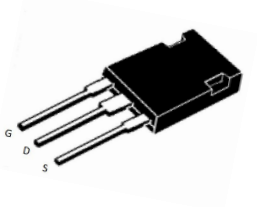
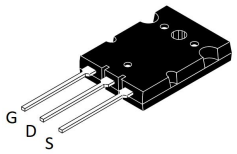
MS60N60HGB3/C1



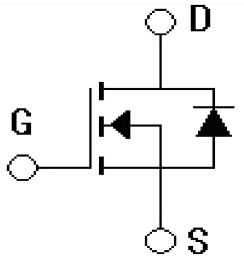
Features

- V_{DS}=600V,I_D=60A
  $R_{DS(on)}$<0.18Ω @ V_{GS}=10V
- 100% avalanche tested
- Minimum Lot-to-Lot variations for robust device
- performance and reliable operation



Applications

- ZVS phase shifted and other full bridge
- Half bridge
- PFC and other boost converter
- Buck converter
- Single and two switch forward
- Flyback



Absolute Ratings (Tc=25℃)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DSS}	600	V
Gate-Source Voltage	V_{GSS}	±30	V
Drain Current-continuous	I_D	60	A
Drain Current-pulse（1）	I_{DM}	210	A
Single Pulsed Avalanche Energy（2）	E_{AS}	1580	mJ
Avalanche Current, Repetitive or Non-Repetitive	I_{AR}	28	A
Maximum Power Dissipation	PD T_C=25℃ Derate above 25℃	1040	W
Operating and Storage Temperature Range	T_J,T_{STG}	-55~+150	℃

Electrical Characteristics(T_{CASE}=25℃ unless otherwise specified)

Parameter	Symbol	Tests conditions	Min	Typ	Max	Units
Drain-Source Voltage	BV_{DSS}	I_D=250μA,V_{GS}=0V	600	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=V_{DSS},V_{GS}=0V	-	-	25	μA

Gate-Body Leakage Current	I_{GSS}	V_{GS}=±30V，V_{DS}=0V	-	-	±100	nA
On-Characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=2.5mA	2.5	4	5	V
Static Drain-Source On-Resistance（3）	$R_{DS(ON)}$	V_{GS}=10V,I_D=28A	-	0.15	0.18	Ω
Forward Transconductance	g_{fs}	V_{DS}=50V,I_D=28A	-	55	-	S
Dynamic Characteristics						
Input capacitance	C_{iss}	V_{DS}=25V, V_{GS}=0V, f=1.0MHZ	-	11.3	-	nF
Output capacitance	C_{oss}		-	1040	-	pF
Reverse transfer capacitance	C_{rss}		-	115	-	pF

Electrical Characteristics(T_{CASE}=25℃ unless otherwise specified)

Parameter	Symbol	Tests conditions	Min	Typ	Max	Units
Switching-Characteristics						
Turn-On delay time	$t_{d(on)}$	V_{DS}=400V,I_D=28A, Rg=2.2Ω,V_{GS}=15V(4)	-	65	-	ns
Turn-On rise time	t_r		-	75	-	ns
Turn-Off delay time	$t_{d(Off)}$		-	190	-	ns
Turn-Off rise time	t_f		-	60	-	ns
Total Gate Charge	Q_g	V_{DS}=300V,I_D=28A, V_{GS}=0-10V	-	280	-	nC
Gate-Source charge	Q_{gs}		-	60	-	nC
Gate-Drain charge	Q_{gd}		-	120	-	nC
Drain-Source Diode Characteristics and Maximum Ratings						
Maximum Continuous Drain-Source Diode Forward Curret	V_{SD}	V_{GS}=0V,I_S=28A	-	-	1.0	V
Diode Forward Current	I_S	TC=25℃	-	-	60	A
Reverse recovery time	Trr	I_S=6A,dI/dT=100A/μS VR=100V,VGS=0V(3)	-	250	290	nS
Reverse recovery charge	Qrr		-	1.41	-	μC

Thermal Characteristic

Parameter	Symbol	Value	Unit
Thermal Resistance,junction to Case	R_{th}(j-C)	0.12	℃/W
Case to Sink Thermal Resistance, Flat, Greased Surface	R_{th}(C-S)	0.11	

Order Message

Marking	Package
MS60N60HGB3	TO-264
MS60N60HGC1	TO-247plus

Notes:

1. Repetitive Rating: Pulse width and case temperature limited by maximum junction temperature.
2. Starting at TJ = 25°C, L = 4.03mH, RG = 25Ω, IAS = 28A.
3. Pulse test: Pulse Width < 380μs, duty cycle < 2%
4. RG is external gate resistance, not including internal gate resistance or gate driver impedance.

Electrical Characteristics

Figure 1, Output Characteristics

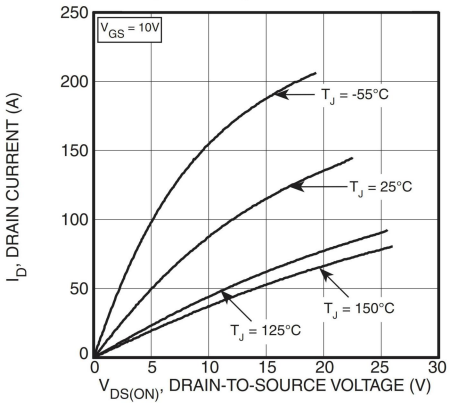


Figure 2, Output Characteristics

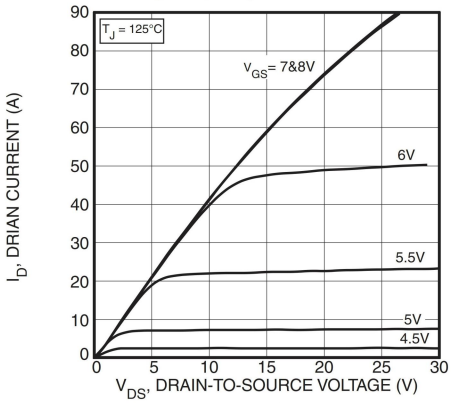


Figure 3, $R_{DS(ON)}$ vs Junction Temperature

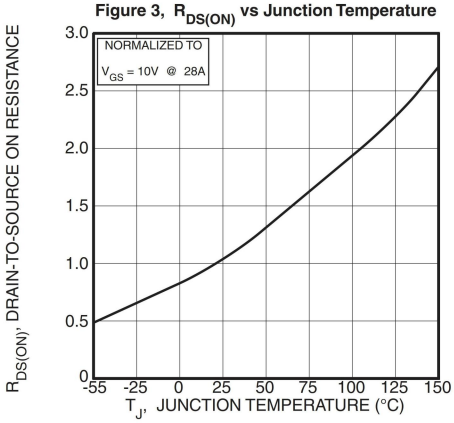


Figure 4, Transfer Characteristics

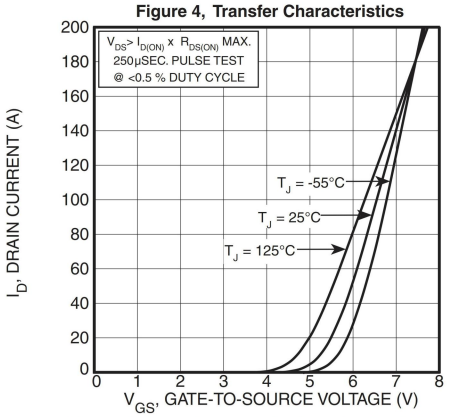


Figure 5, Gain vs Drain Current

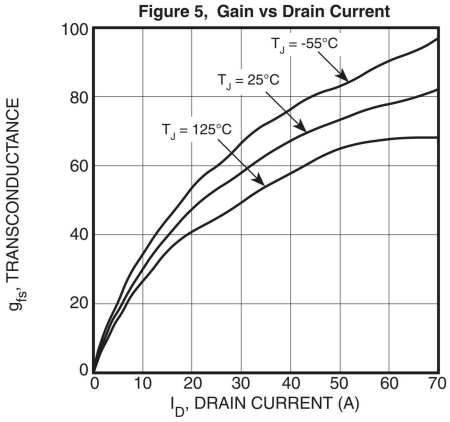


Figure 6, Capacitance vs Drain-to-Source Voltage

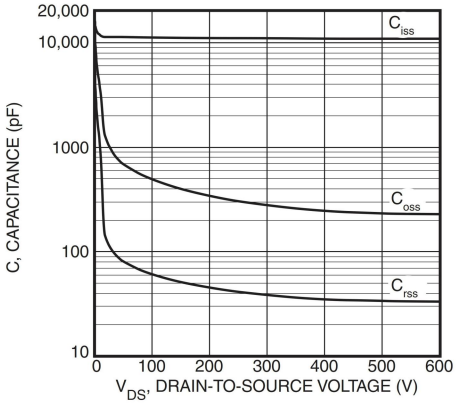


Figure 7, Gate Charge vs Gate-to-Source Voltage

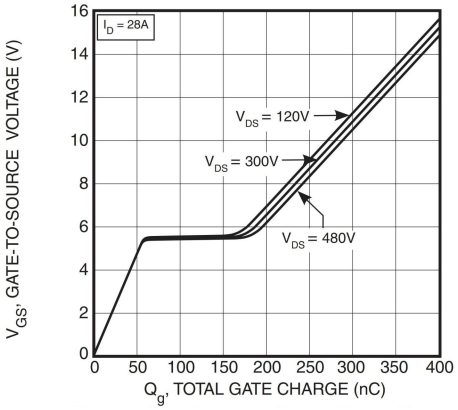


Figure 8, Reverse Drain Current vs Source-to-Drain Voltage

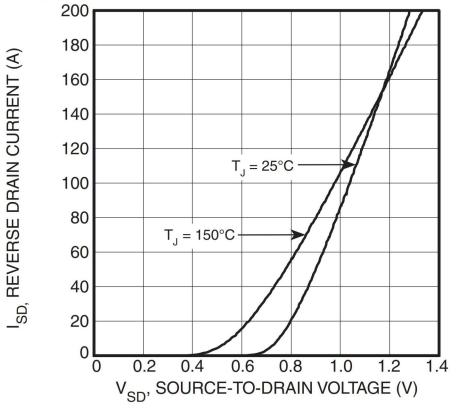


Figure 9, Forward Safe Operating Area

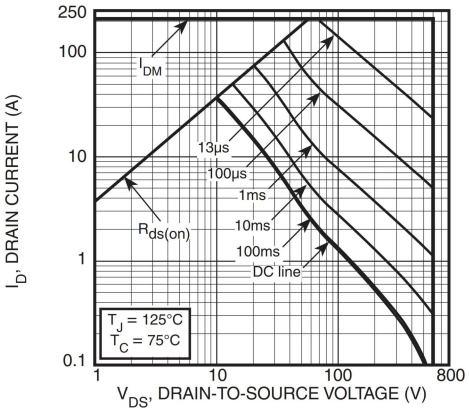


Figure 10, Maximum Forward Safe Operating Area

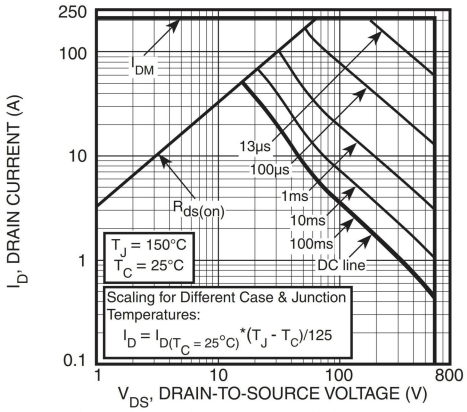
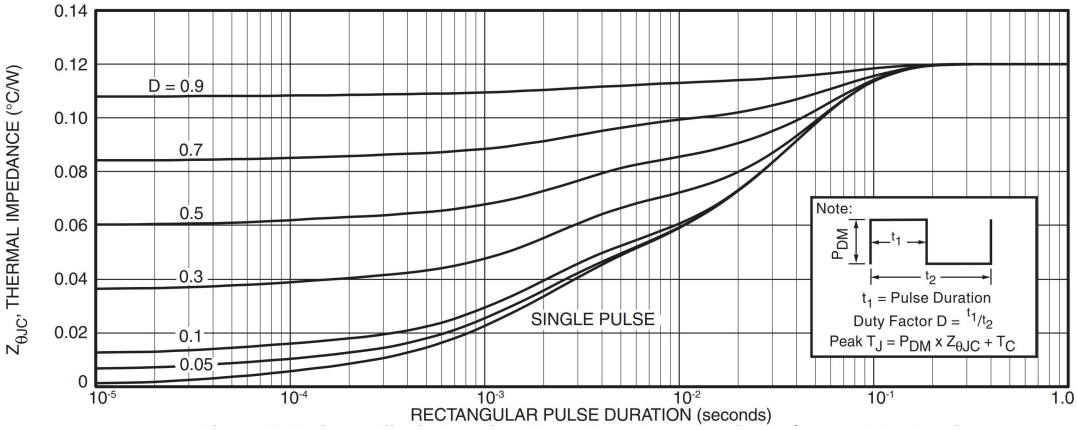
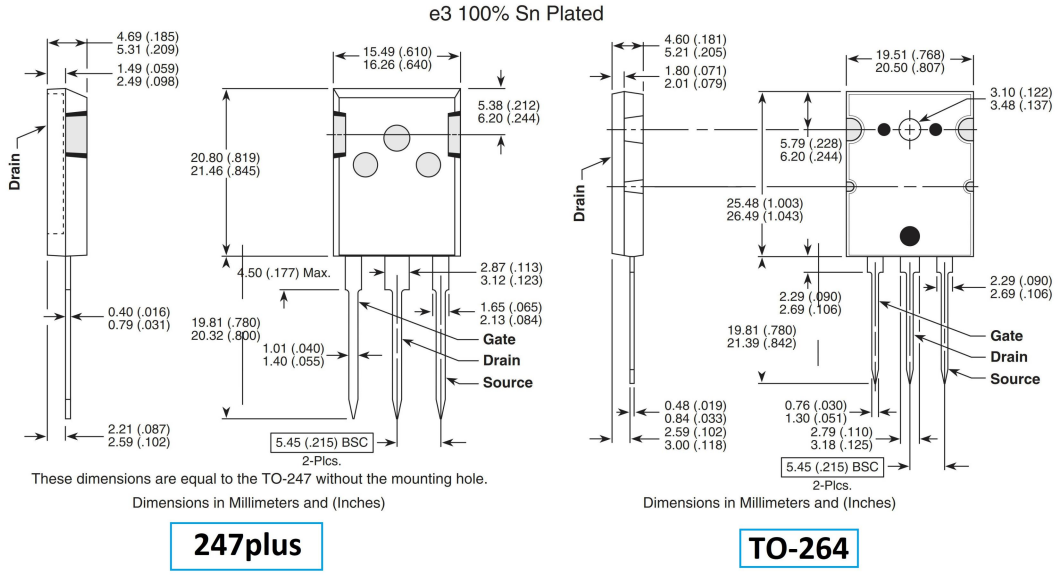


Figure 11. Maximum Effective Transient Thermal Impedance Junction-to-Case vs Pulse Duration



Package Mechanical DATA



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