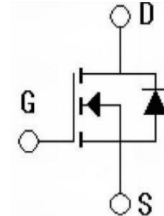
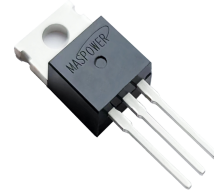


Features

- 60V, 250A, $R_{DS(on)}$.Typ=1.73m Ω @ V_{GS} = 10V
- Improved dv/dt capability
- Fast switching
- 100% EAS Guaranteed
- Green device available



Applications

- Motor Drives
- UPS
- DC-DC Converter

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

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DSS}	60	V
Gate-Source Voltage	V_{GSS}	± 20	V
Drain Current-continuous	$I_{D,TC=25^\circ\text{C}}$	250	A
	$I_{D,TC=100^\circ\text{C}}$	170	
Drain Current-pulse ⁽¹⁾	I_{DM}	1000	A
Single Pulsed Avalanche Energy ($T_j=25^\circ\text{C}$)	E_{AS}	1342	mJ
Maximum Power Dissipation	$P_D, TC=25^\circ\text{C}$	320	W
Operating and Storage Temperature Range	T_J, T_{STG}	-55~+175	$^\circ\text{C}$

1.Pulse width Limited by safe operating area

Electrical Characteristics($T_c=25^\circ\text{C}$)

Parameter	Symbol	Tests conditions	Min	Typ	Max	Units
Drain-Source Voltage	BV_{DSS}	$I_D=250\mu\text{A}, V_{GS}=0\text{V}$	60	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=V_{DSS}, V_{GS}=0\text{V}, T_c=25^\circ\text{C}$	-	-	1	μA
		$T_c=125^\circ\text{C}$	-	-	100	μA
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 20\text{V}, V_{DS}=0\text{V}$	-	-	± 100	nA

On-Characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2.0	3.0	4.0	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=50A$	-	1.73	1.95	mΩ
Forward Transconductance	g_{fs}	$V_{DS}=20V, I_D=50A$	-	98	-	S
Dynamic Characteristics						
Input capacitance	C_{iss}	$V_{DS}=30V, V_{GS}=0V, f=250kHz$	-	5494	-	pF
Output capacitance	C_{oss}		-	3148	-	pF
Reverse transfer capacitance	C_{rss}		-	55.9	-	pF

Electrical Characteristics($T_{CASE}=25^{\circ}C$ unless otherwise specified)

Parameter	Symbol	Tests conditions	Min	Typ	Max	Units
Switching-Characteristics						
Turn-On delay time	$t_{d(on)}$	$V_{DS}=30V, I_D=50A,$ $V_{GS}= 10V, R_G= 10\Omega$	-	72	-	ns
Turn-On rise time	t_r		-	165	-	ns
Turn-Off delay time	$t_{d(Off)}$		-	66	-	ns
Turn-Off rise time	t_f		-	31	-	ns
Total Gate Charge	Q_g	$V_{DS}=30V, I_D=50A,$ $V_{GS}= 10V$	-	73	-	nC
Gate-Source charge	Q_{gs}		-	28	-	nC
Gate-Drain charge	Q_{gd}		-	15	-	nC
Drain-Source Diode Characteristics and Maximum Ratings						
Maximum Continuous Drain-Source Diode Forward Current	V_{SD}	$V_{GS}=0V, I_S=50A$	-	-	1.1	V
Diode Forward Current	I_S		-	-	250	A
Reverse recovery time	T_{rr}	$I_S=50A,$ $di/d= 100A/\mu S$	-	57	-	nS
Reverse recovery charge	Q_{rr}		-	73	-	nC

Thermal Characteristic

Parameter	Symbol	Value	Unit
Thermal Resistance, junction to Case	$R_{th(j-C)}$	0.47	$^{\circ}C/W$
Thermal Resistance, junction to Ambient	$R_{th(j-A)}$	62	$^{\circ}C/W$

Notes:

1. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycles $\leq 2\%$

Electrical Characteristics

Figure 1. Typ. Output Characteristics

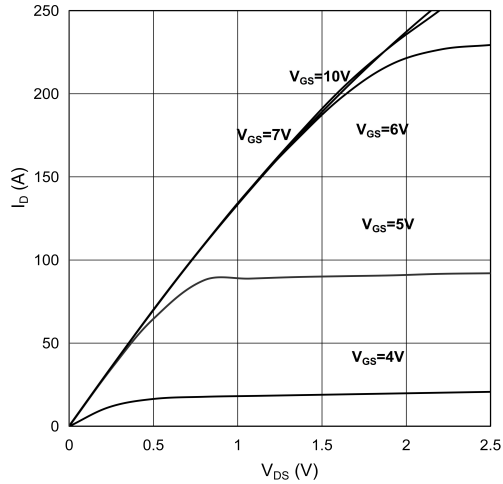


Figure 2. Transfer Characteristics

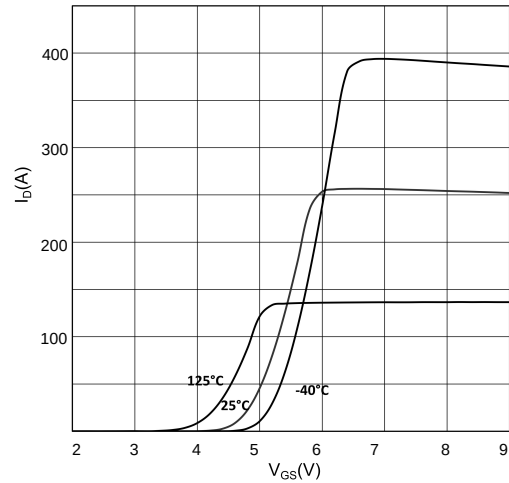


Figure 3. On-Resistance vs. Drain Current

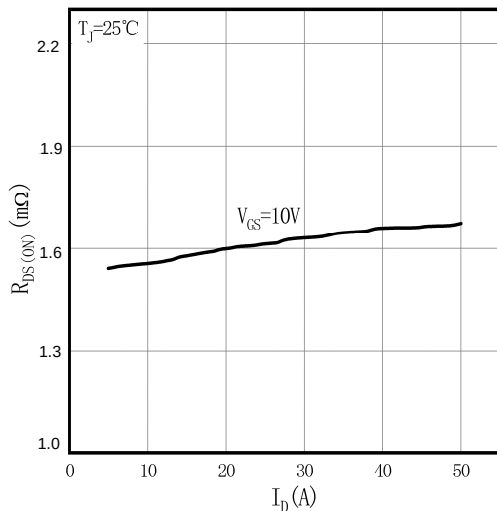


Figure 4. On-Resistance vs. Temperature

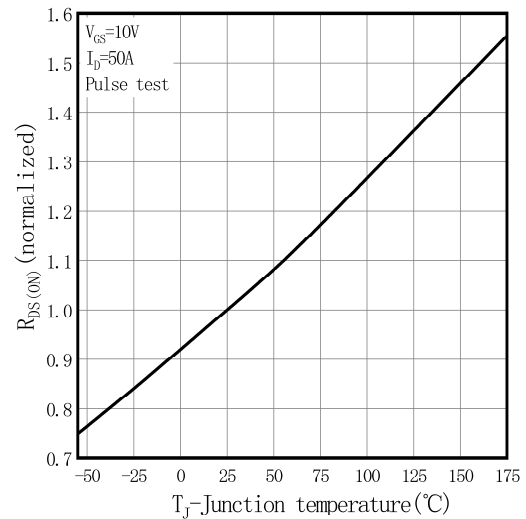


Figure 5. Breakdown Voltage vs. Temperature

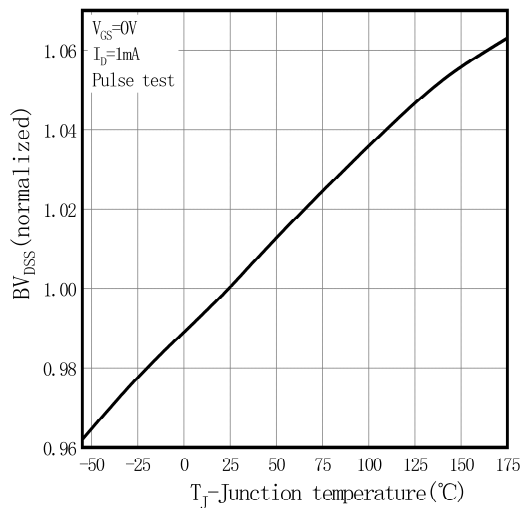


Figure 6. Threshold Voltage vs. Temperature

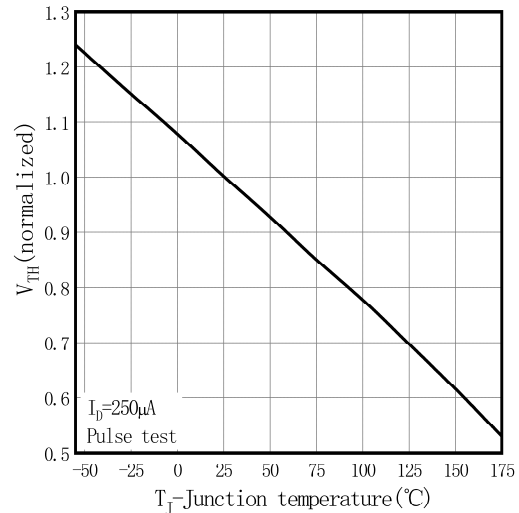


Figure 7. $R_{DS(on)}$ vs. Gate Voltage

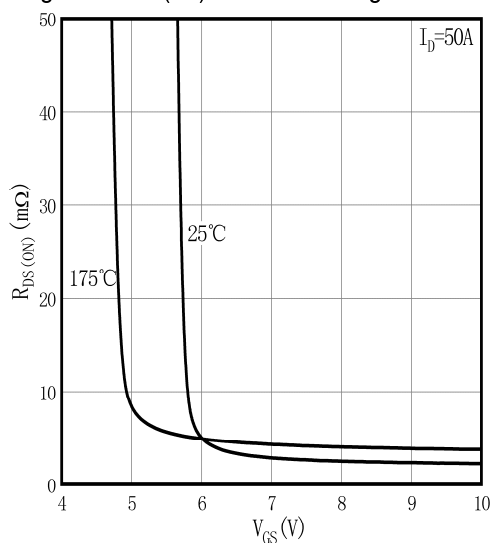


Figure 8. Body-Diode Characteristics

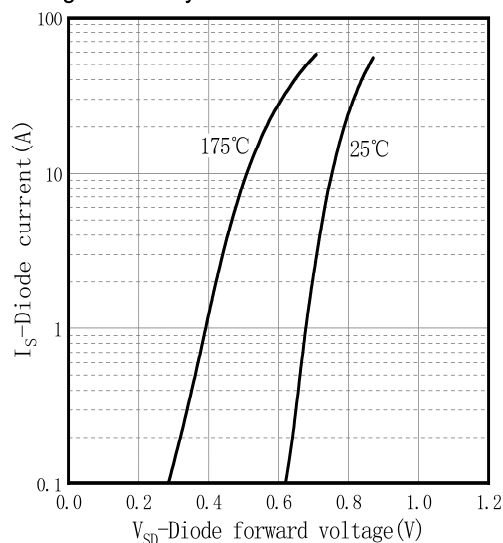


Figure 9. Capacitance Characteristics

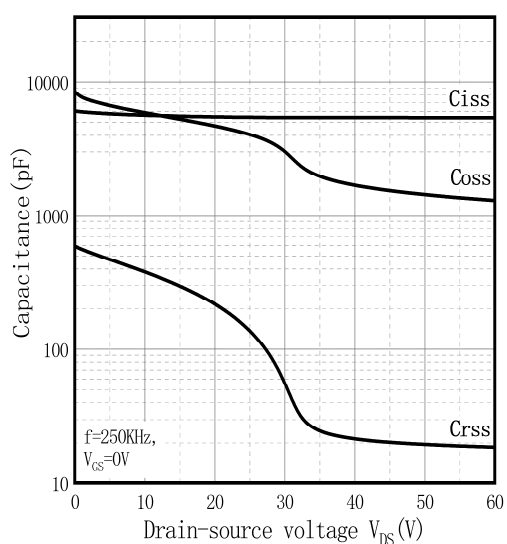


Figure 10. Gate Charge Characteristics

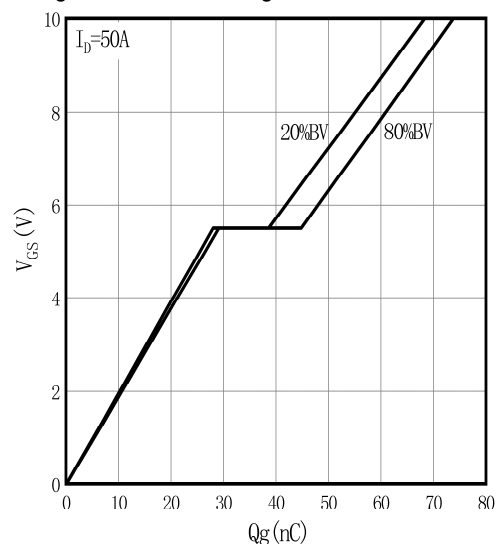


Figure 11. Drain Current Derating

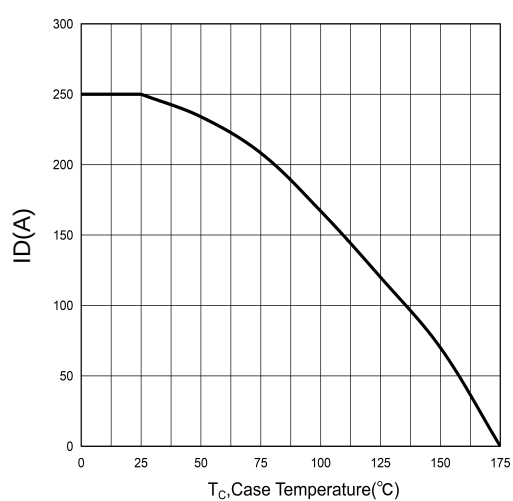


Figure 12. Power Dissipation vs. Temperature

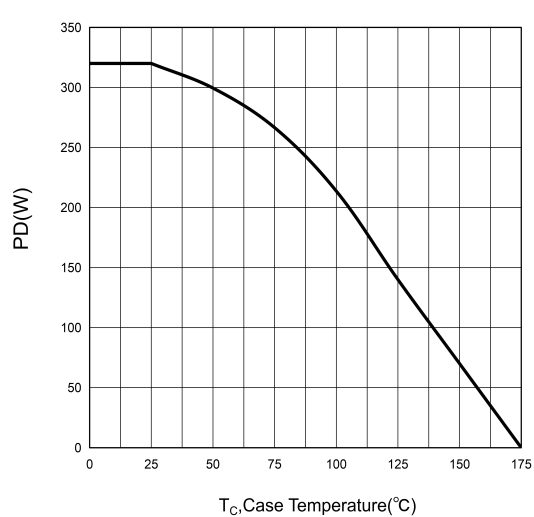


Figure 13. Safe Operating Area

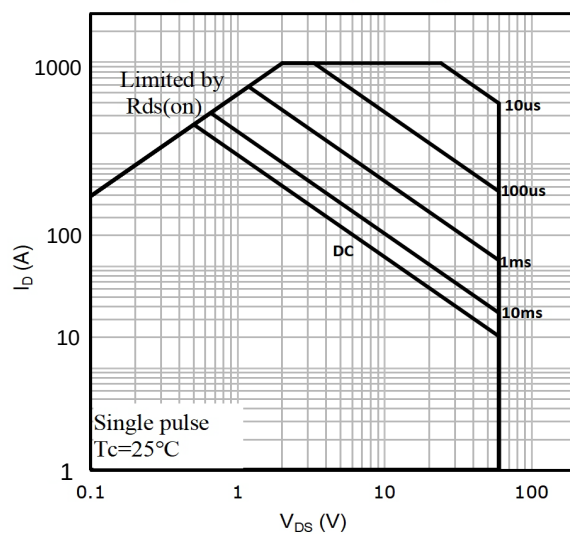
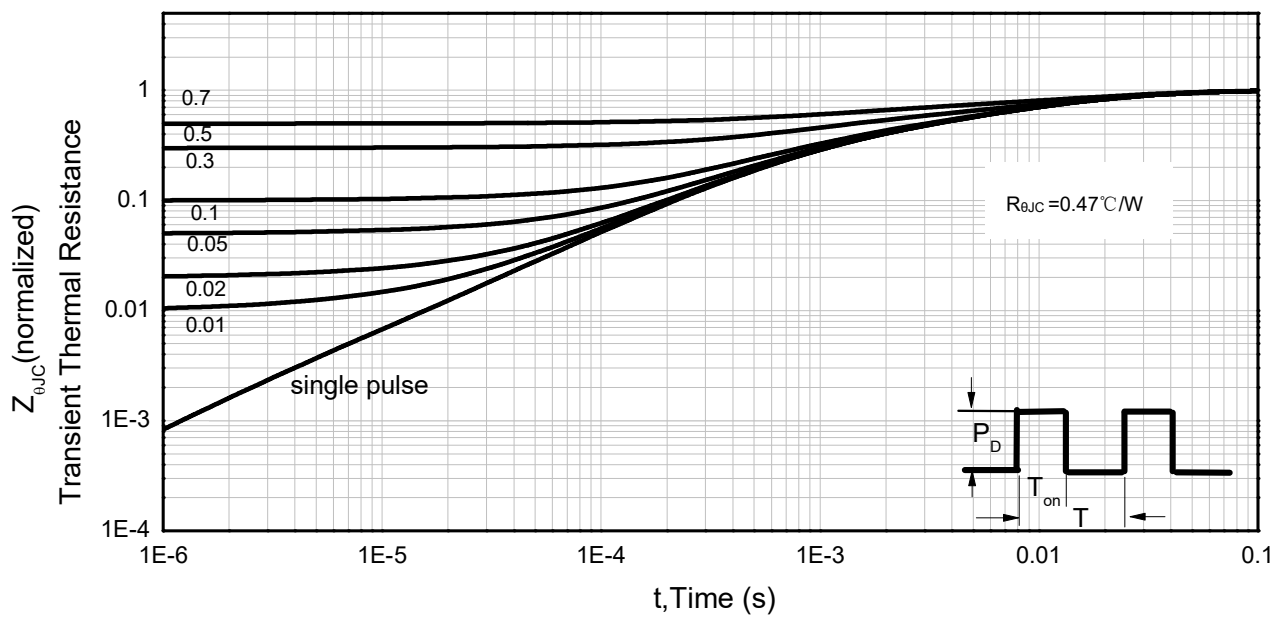
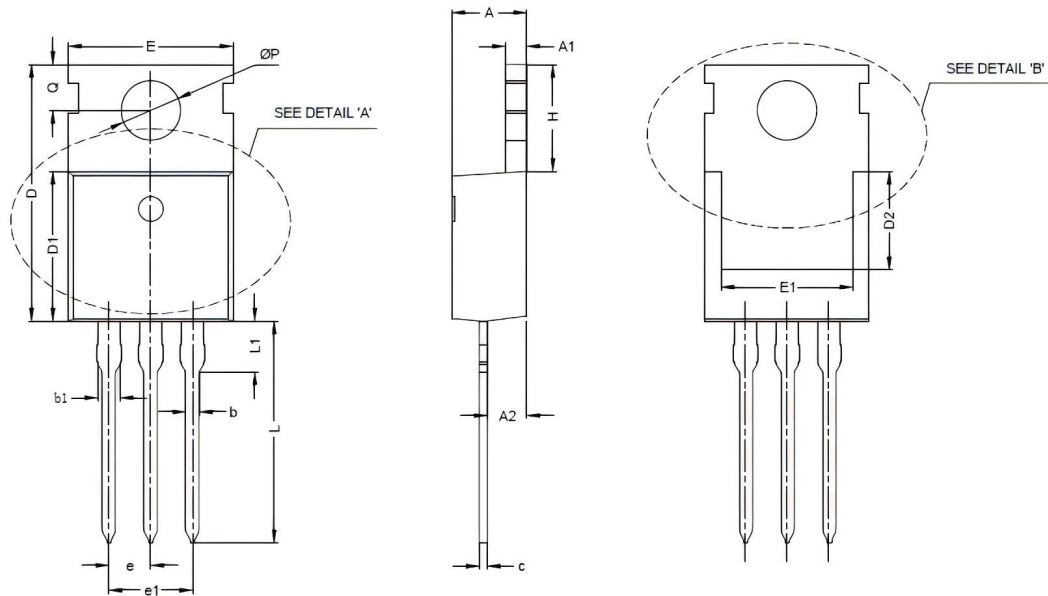


Figure 14. Normalized Maximum Transient Thermal Impedance (R_{thJC})



Package Mechanical Data



SYMBOLS	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	4.25	4.70	0.167	0.185
A1	1.20	1.40	0.047	0.055
A2	2.20	2.92	0.087	0.115
b	0.70	0.97	0.028	0.038
b1	1.14	1.78	0.045	0.070
c	0.40	0.61	0.016	0.024
D	14.32	16.15	0.564	0.636
D1	8.39	9.40	0.330	0.370
D2	5.50	—	0.217	—
E	9.70	10.36	0.382	0.408
E1	7.00	—	0.276	—
e	2.54 BSC		0.100 BSC	
e1	5.08 BSC		0.200 BSC	
H	6.25	6.95	0.246	0.274
L	12.75	14.40	0.502	0.567
L1	—	4.05	—	0.159
ØP	3.40	3.80	0.134	0.150
Q	2.54	3.35	0.100	0.132