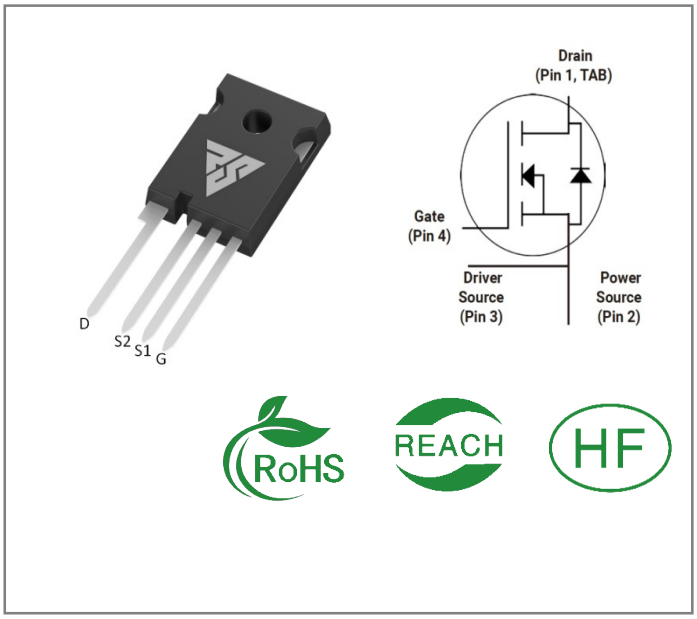
VDS	RDS(on)	ID@25℃
1200V	40mΩ	65A



Applications:

- Solar Inverters
- Switch Mode Power Supplies
- High Voltage DC/DC Converters
- EV Charging
- Motor Drives

Features:

- High Blocking Voltage with Low On-Resistance
- High Speed Switching with Low Capacitances
- Easy to Parallel and Simple to Drive
- Avalanche Ruggedness

Benefits:

- Higher System Efficiency
- Reduced Cooling Requirements
- Increased Power Density
- Increased System Switching Frequency

Ordering Information

Part Number	Package	Marking	Packing	Qty.
RSM12H040Z	TO-247-4	RSM12H040Z	Tube	30 PCS

Maximum Ratings (TJ= 25℃ unless otherwise specified)

Symbol	Parameter	Value	Unit	Test Conditions	Note
VDSmax	Drain - Source Voltage	1200	V	VGS=0V,ID =100μA	
VGSmax	Gate - Source Voltage	-8/+22	V	Absolute maximum values	
VGSop	Gate - Source Voltage	-4/+18	V	Recommended operational values	
ID	Continuous Drain Current	65 43	A	VGS=20V, TC =25℃ VGS=20V, TC =100℃	
ID(pulse)	Pulsed Drain Current	150	A	Pulse width tp limited by TJmax	
PD	Power Dissipation	342	W	TC =25℃, TJ =175℃	
TL	Solder Temperature	260	℃		
TJ, Tstg	Operating Junction and StorageTemperature	-55 to + 175	℃		

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Electrical Characteristics (TJ= 25℃ unless otherwise specified)

Symbol	Parameter	Min	Typ	Max	Unit	Test Conditions	Note
V(BR)DSS	Drain-Source Breakdown Voltage	1200			V	VGS=0V,ID =100μA	
VGS(th)	Gate Threshold Voltage	1.9	2.6	4.0	V	VGS= VDS, IDS=9.2mA, TC =25℃	
			1.8			VGS= VDS, IDS=9.2mA, TC =175℃	
IDSS	Zero Gate Voltage Drain Current		1	100	μA	VDS= 1200V, VGS=0V	
IGSS	Gate-Source Leakage Current		10	250	nA	VGS=22V, VDS= 0V	
RDS(on)	Drain-Source on-state Resistance		40	52	mΩ	VGS=18V, ID =33.3A, TC =25℃	
			63			VGS=18V, ID =33.3A, TC =175℃	
Ciss	Input Capacitance		3280		pF	VGS=0V, VDS=1000 V, f=1MHz，VAC=25 mV	
Coss	Output Capacitance		118				
Crss	Reverse Transfer Capacitance		12.3				
EON	Turn-On Switching Energy		857		μJ	VDS =800V, VGS =-4/18V, ID =30A, RG(ext) = 2.5Ω, L= 100μH	
EOFF	Turn-Off Energy		235				
td(on)	Turn-On Delay Time		19		ns	VDS =800V, VGS =-4/18 V ID = 30A, RG(ext) =2. 5 Ω , RL =20Ω	
tr	Rise Time		25				
td(off)	Turn-Off Delay Time		31				
tf	Fall Time		12				
RG(int)	Internal Gate Resistance		4.5		Ω	f=1 MHz, VAC=25mV	
Qgs	Gate to Source Charge		39		nC	VDS=800V, VGS=-4/18V ID =30A	
Qgd	Gate to Drain Charge		32				
Qg	Total Gate Charge		125				

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Reverse Diode Characteristics (TJ= 25℃ unless otherwise specified)

Symbol	Parameter	Typ.	Max	Unit	Test Conditions	Note
VSD	Diode Forward Voltage	4.2		V	VGS=-4V, ISD = 16.5 A, TJ = 25℃	
		3.9		V	VGS=-4V, ISD= 16.5 A, TJ= 175℃	
IS	Continuous Diode Forward Current		65	A	TC= 25℃	
trr	Reverse Recovery time	43		ns	ISD= 30 A, VR = 800V	
Qrr	Reverse Recovery Charge	231		nC		
Irrm	Peak Reverse Recovery Current	2.6		A		

Thermal Characteristics (TJ= 25℃ unless otherwise specified)

Symbol	Parameter	Typ.	Unit	Test Conditions	Note
RθJC	Thermal Resistance from Junction to Case	0.4	℃/W		
RθJA	Thermal Resistance From Junction to Ambient	40			

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Typical Feature Curve

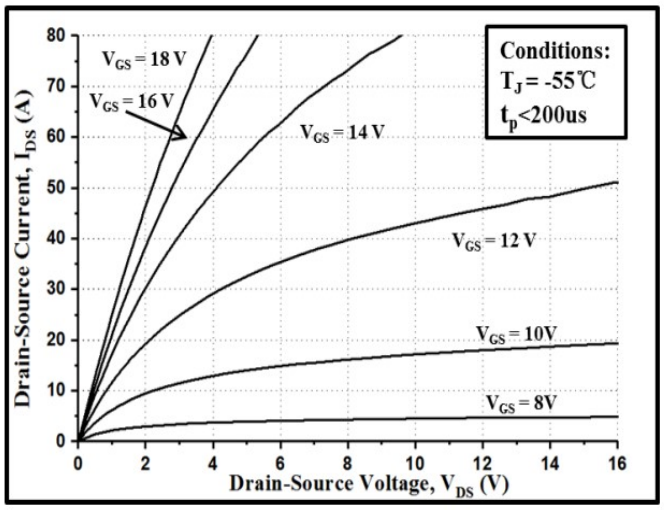

Figure 1. Output Characteristics T_J = -55℃

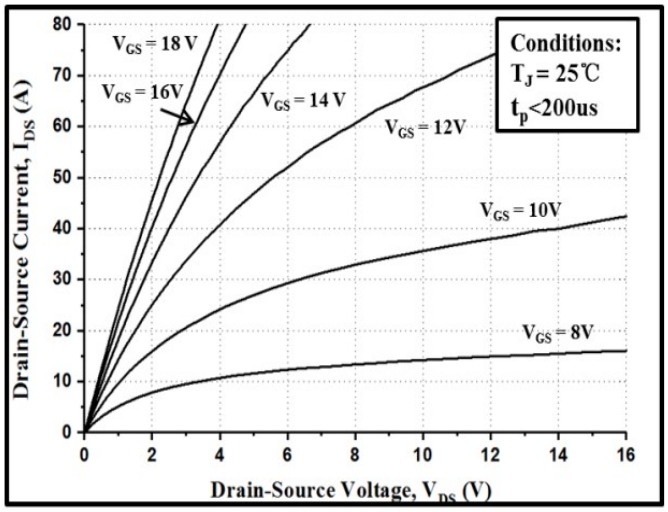

Figure 2. Output Characteristics T_J = 25℃

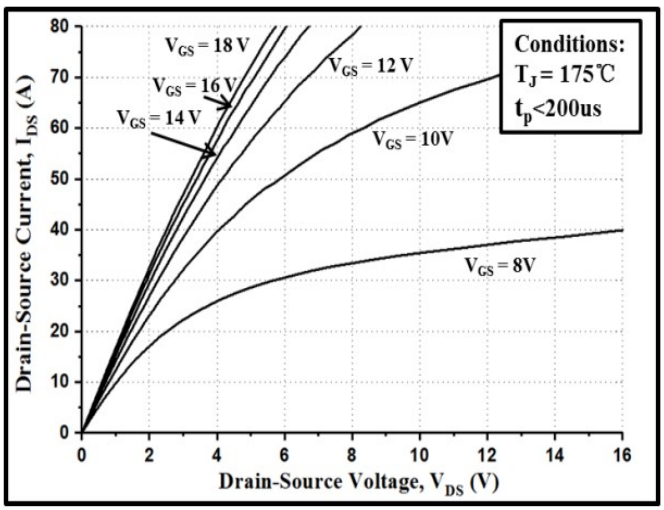

Figure 3. Output Characteristics T_J = 175℃

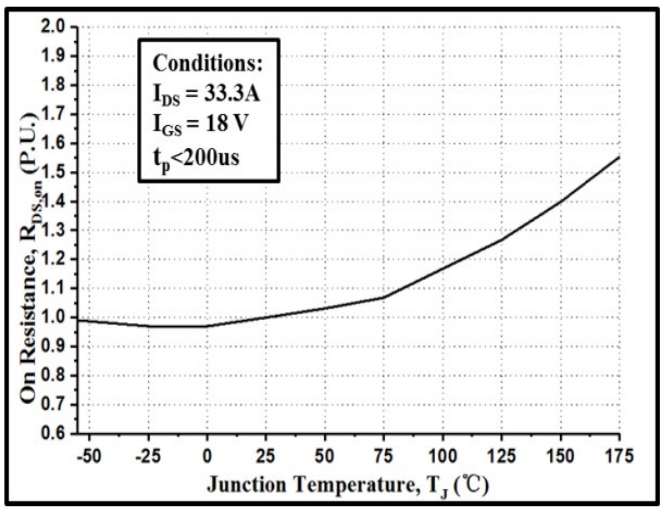

Figure 4. Normalized On-Resistance vs. Temperature

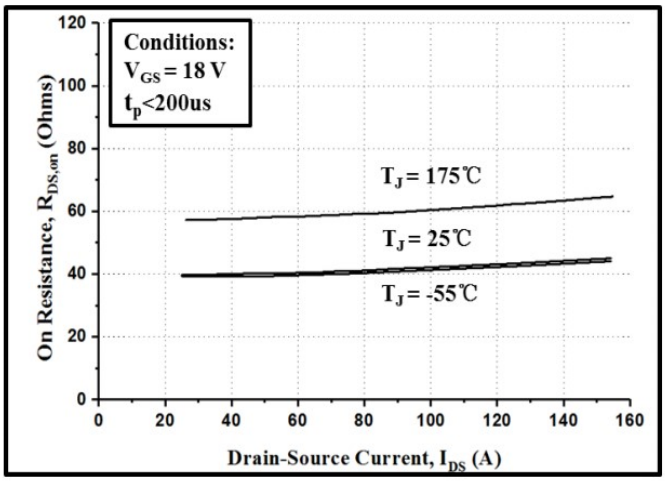

Figure 5. On-Resistance vs. Drain Current
For Various Temperatures

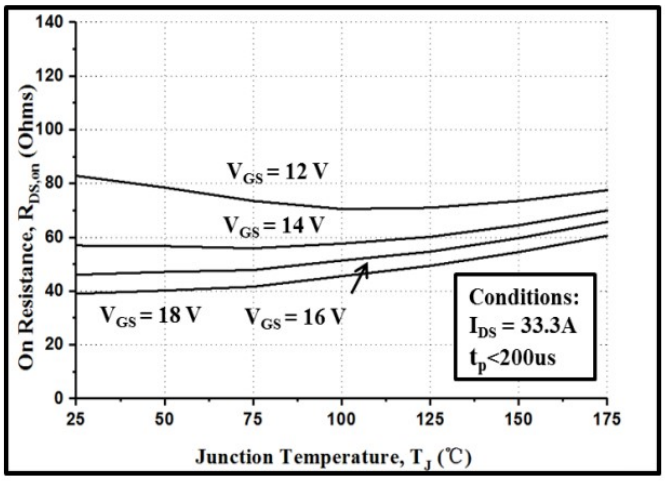

Figure 6. On-Resistance vs. Temperature
For Various Gate Voltage

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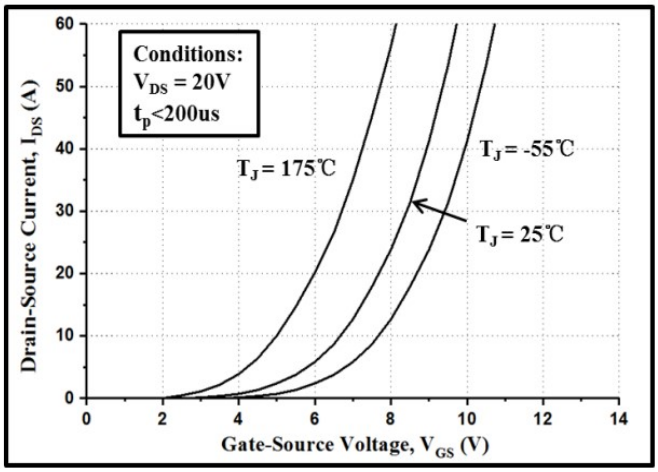

Figure 7. Transfer Characteristic for Various Junction Temperatures

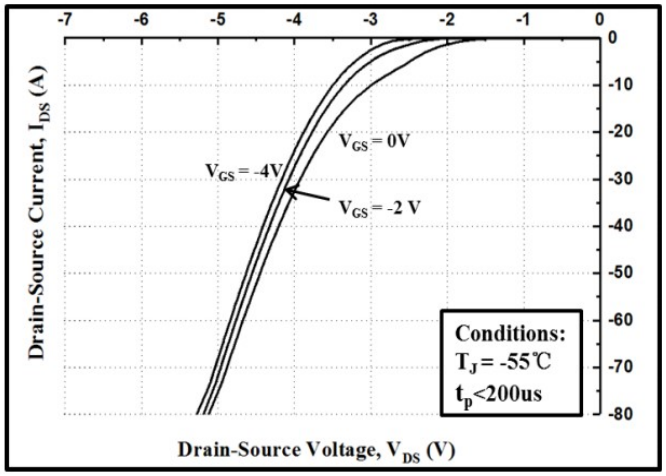

Figure 8. Body Diode Characteristic at -55℃

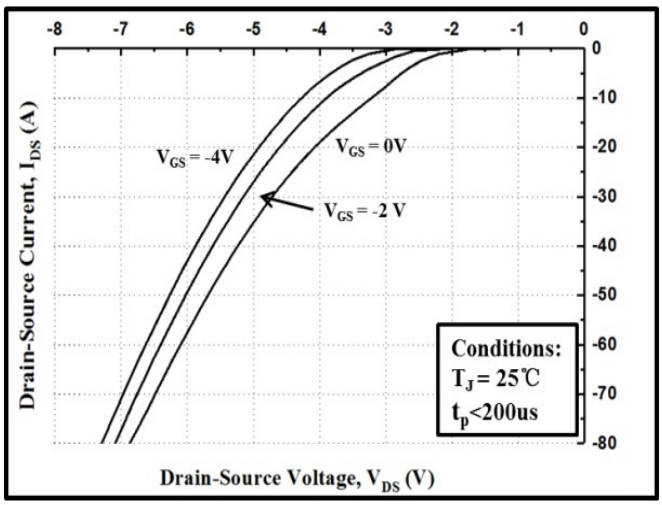

Figure 9. Body Diode Characteristic at 25℃

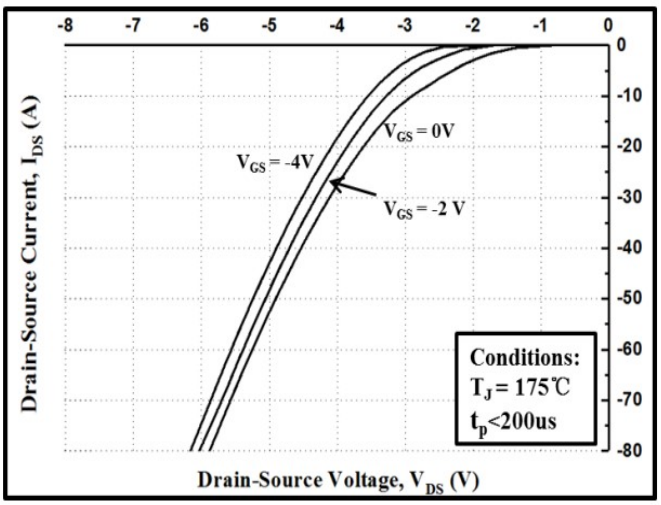

Figure 10. Body Diode Characteristic at 175℃

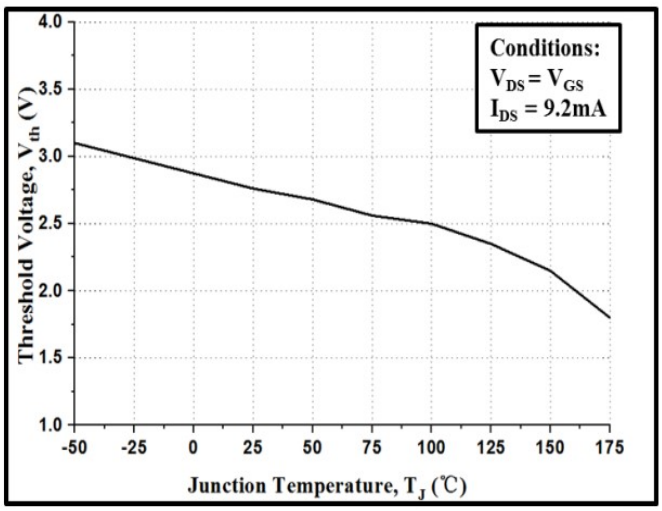

Figure 11. Threshold Voltage vs. Temperature

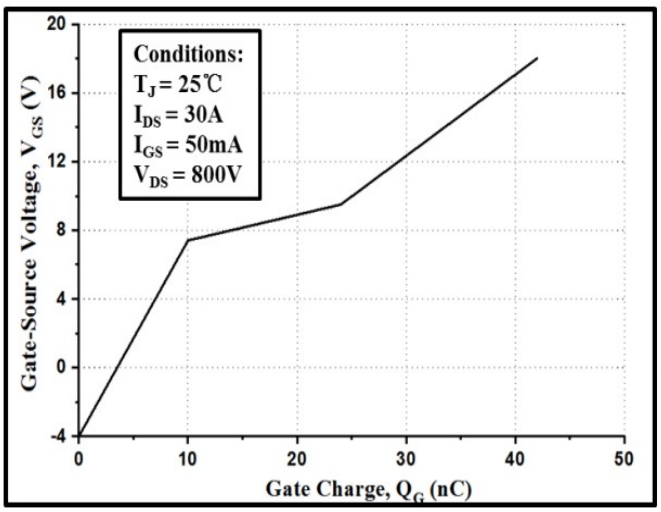

Figure 12. Gate Charge Characteristics

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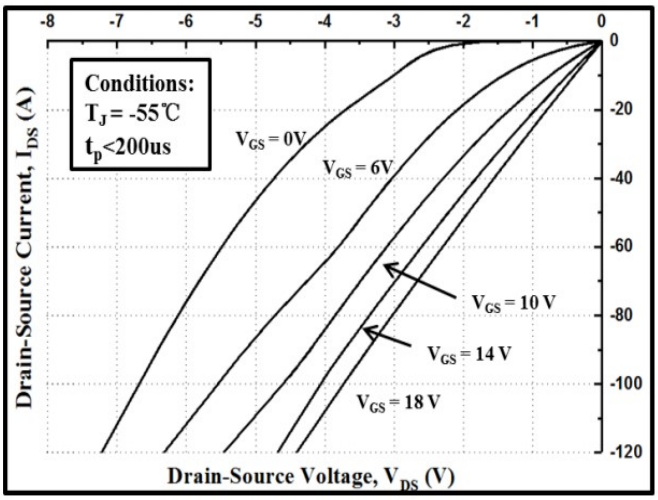

Figure 13. 3rd Quadrant Characteristic at -55℃

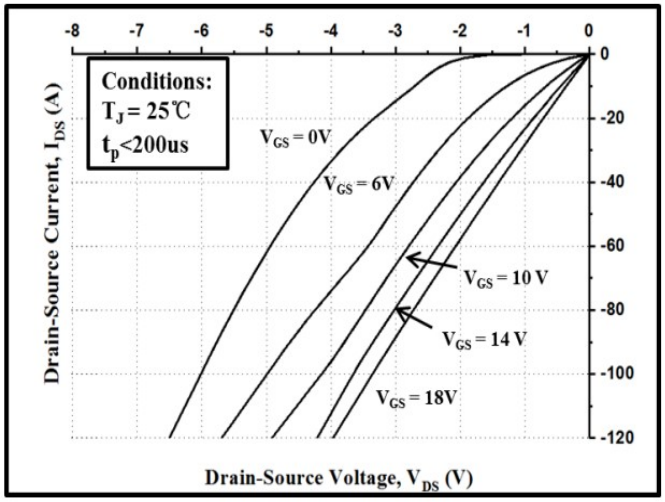

Figure 14. 3rd Quadrant Characteristic at 25℃

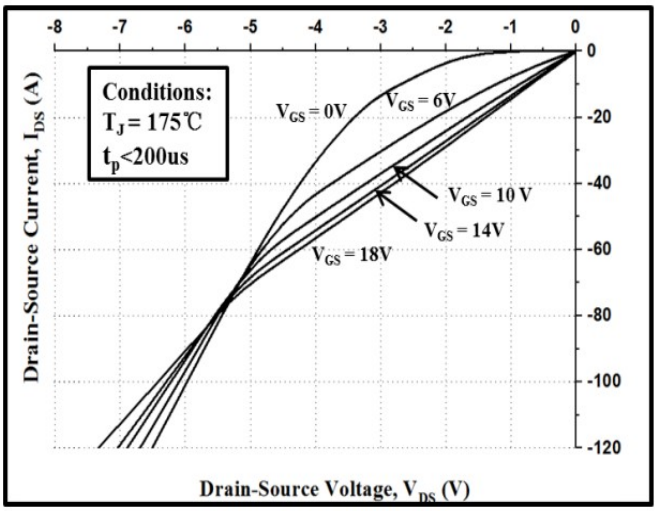

Figure 15. 3rd Quadrant Characteristic at 150 ℃

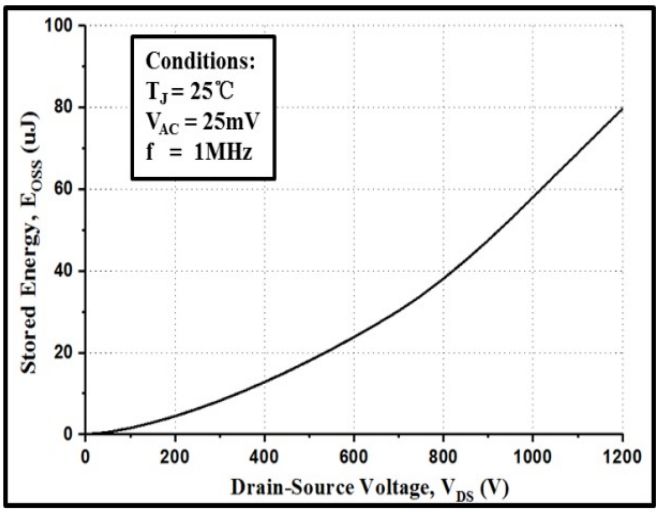

Figure16. Output Capacitor Stored Energy

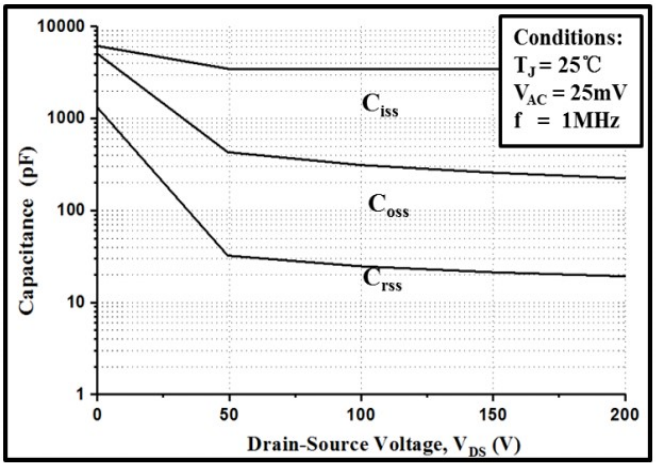

Figure 17. Capacitances vs. Drain-Source Voltage (0 - 200V)

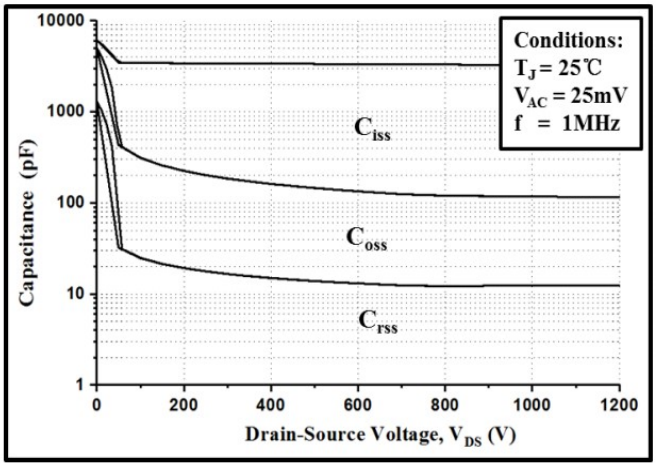

Figure 18. Capacitances vs. Drain-Source Voltage (0 - 1200V)

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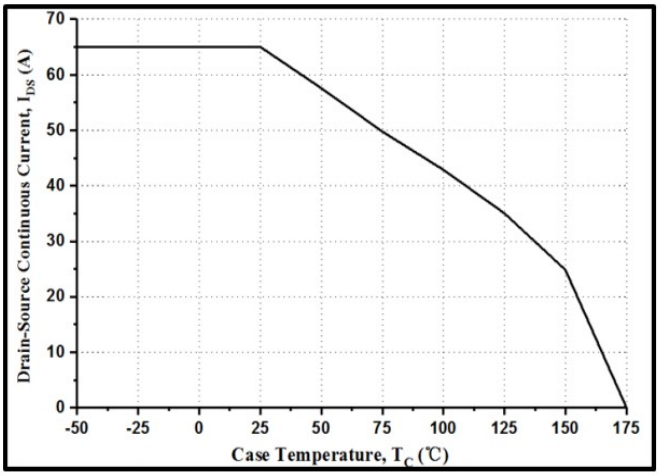

Figure 19. Continuous Drain Current Derating vs. Case Temperature

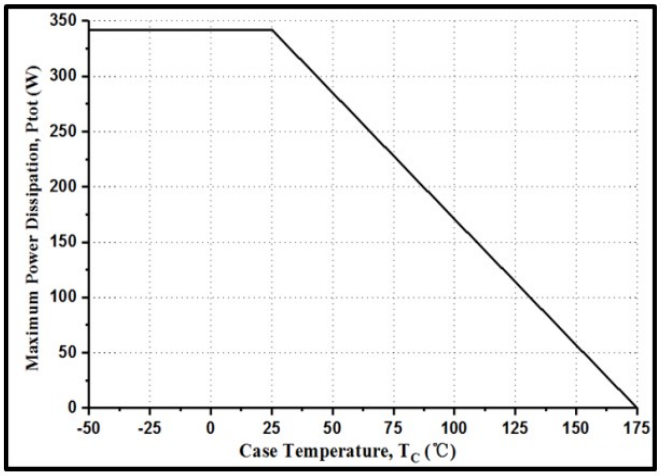

Figure 20. Maximum Power Dissipation Derating vs. Case Temperature

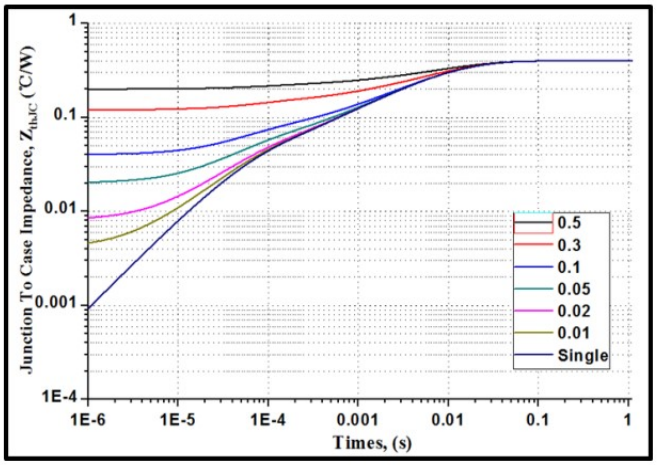

Figure 21. Transient Thermal Impedance (Junction - Case)

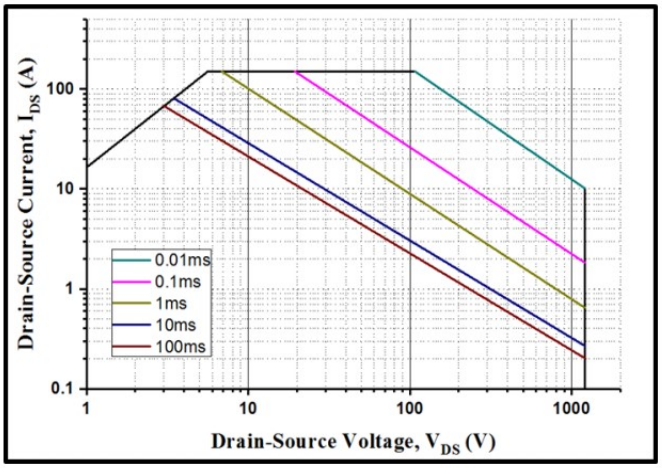

Figure22. Safe Operating Area

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Test Circuit Schematic

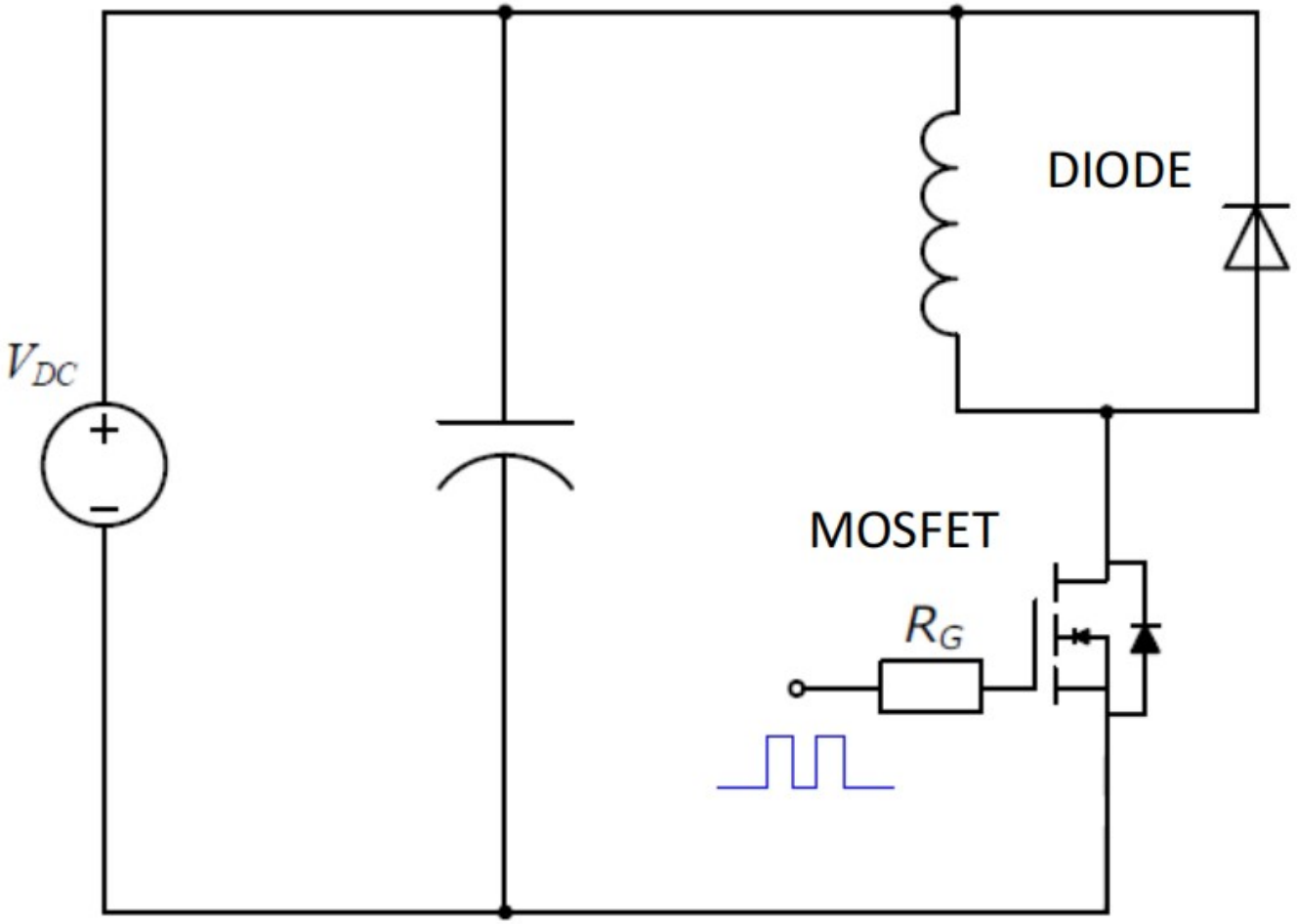

Figure 23. Clamped Inductive Switching Waveform Test Circuit

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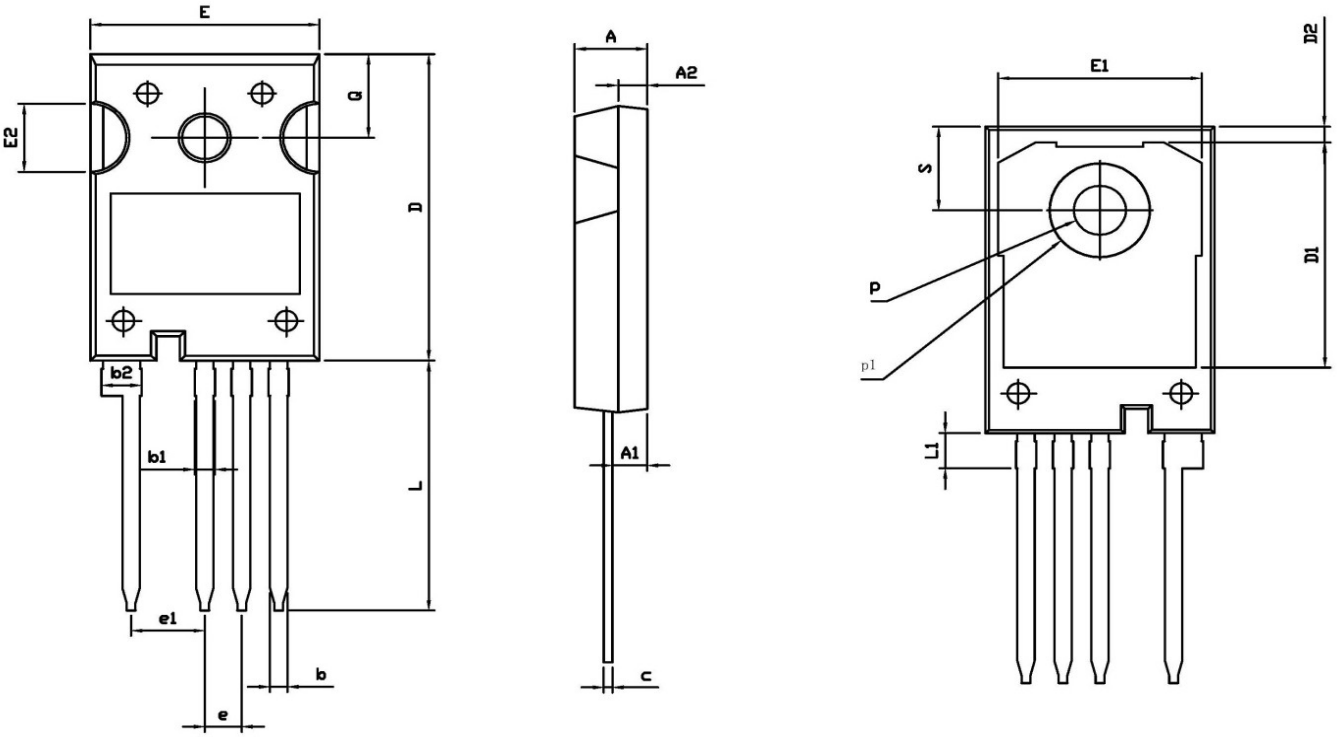
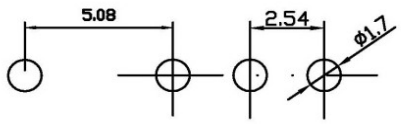
Package outline drawing(TO-247-4 Unit: mm)



RECOMMENDED LAND PATTERN



UNIT: mm

	MIN	NOM	MAX
A	4.80	5.00	5.20
A1	2.25	2.40	2.45
A2	1.85	2.00	2.15
b	1.05	1.20	1.35
b1	1.00	1.30	1.60
b2	2.35	2.65	2.95
c	0.50	0.60	0.70
D	22.34	22.54	22.74
D1	16.00	16.50	17.00
D2	0.97	1.17	1.37
e	2.34	2.54	2.74
e1	4.88	5.08	5.28
E	15.60	15.80	16.00
E1	13.50	14.00	14.50
E2	4.80	5.00	5.20
L	18.08	18.38	18.68
L1	2.38	2.58	2.78
p	3.50	3.60	3.70
p1	6.60	6.80	7.00
Q	6.00	6.15	6.30
S	6.00	6.15	6.30

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