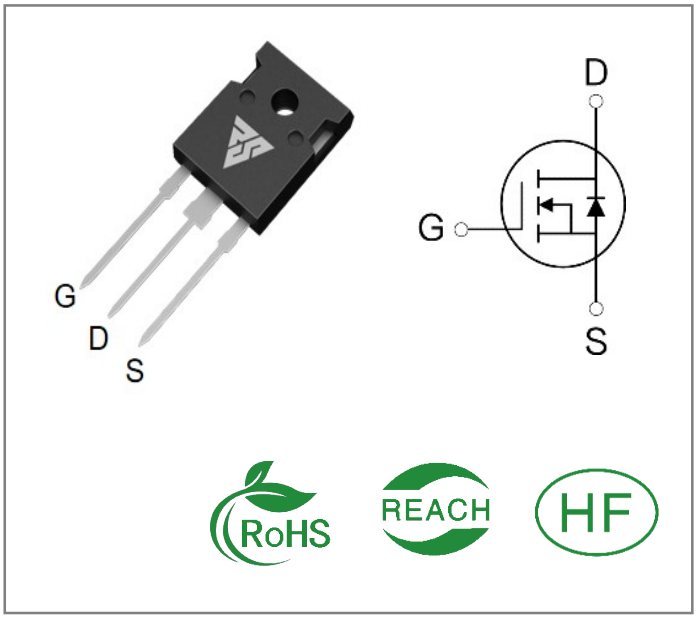
VDS	RDS(on)	ID@25℃
1200V	40mΩ	65A



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.
RSM12H040W	TO-247-3	RSM12H040W	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=18V, TC =25℃ VGS=18V, TC =100℃	
ID(pulse)	Pulsed Drain Current	100	A	Pulse width tp limited by TJmax	
PD	Power Dissipation	375	W	TC =25℃， TJ =175℃	
TL	Solder Temperature	260	℃		
TJ, Tstg	Operating Junction and StorageTemperature	-55 to + 175	℃		

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		V	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℃	
			75			VGS=18V, ID =33.3A, TC =175℃	
Ciss	Input Capacitance		2080		pF	VGS=0V, VDS=1000 V, f=1MHz，VAC=25 mV	
Coss	Output Capacitance		86				
Crss	Reverse Transfer Capacitance		15				
EON	Turn-On Switching Energy		687		μJ	VDS =800V, VGS =-4/18V,ID = 30A, RG(ext) = 2.5Ω, L= 100μH	
EOFF	Turn-Off Energy		418				
td(on)	Turn-On Delay Time		24.5		ns	VDS =800V, VGS =-4/18 V ID = 30A, RG(ext) =2. 5 Ω , RL =20Ω	
tr	Rise Time		21.5				
td(off)	Turn-Off Delay Time		99				
tf	Fall Time		33				
RG(int)	Internal Gate Resistance		3.8		Ω	f=1 MHz, VAC=25mV	
Qgs	Gate to Source Charge		32.3		nC	VDS=800V, VGS=-4/18V ID =30A	
Qgd	Gate to Drain Charge		18.4				
Qg	Total Gate Charge		120				

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 = 16.5A, 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	29		ns	ISD= 30 A, VR = 800V	
Qrr	Reverse Recovery Charge	77		nC		
Irrm	Peak Reverse Recovery Current	5		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			

Typical Feature Curve

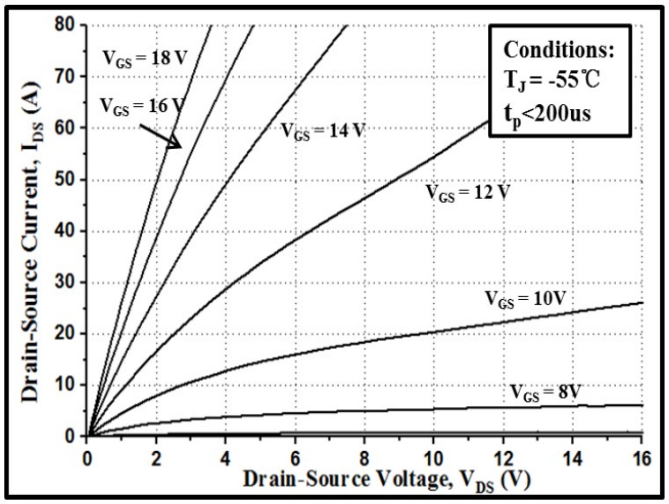


Figure 1. Output Characteristics T_J = -55℃

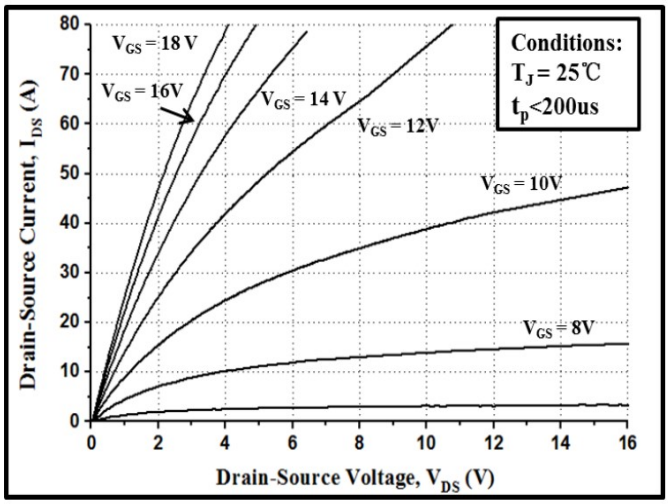


Figure 2. Output Characteristics T_J = 25℃

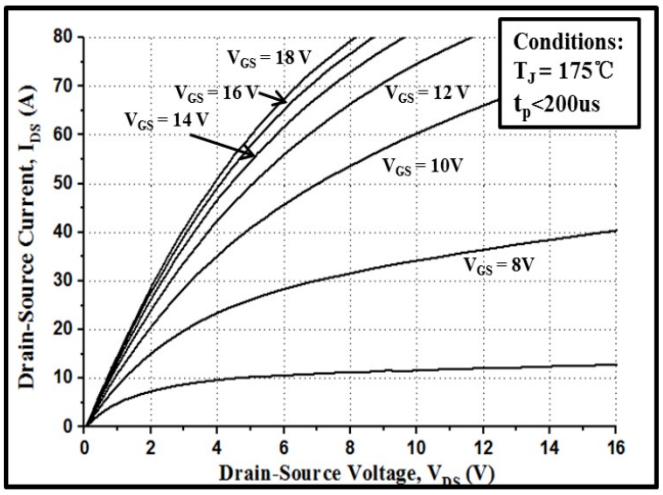


Figure 3. Output Characteristics T_J = 175℃

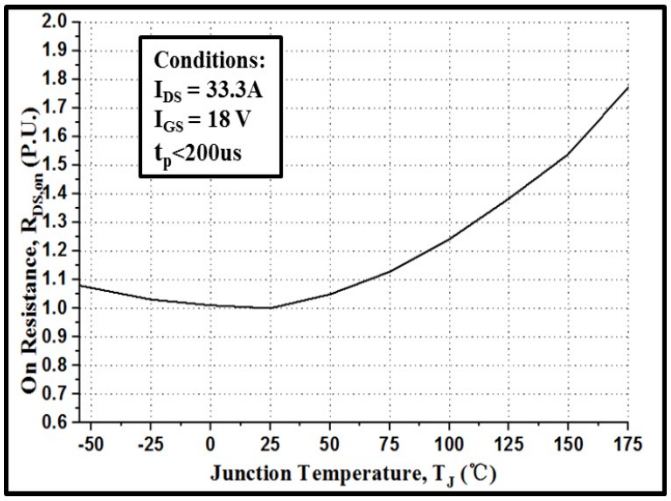


Figure 4. Normalized On-Resistance vs. Temperature

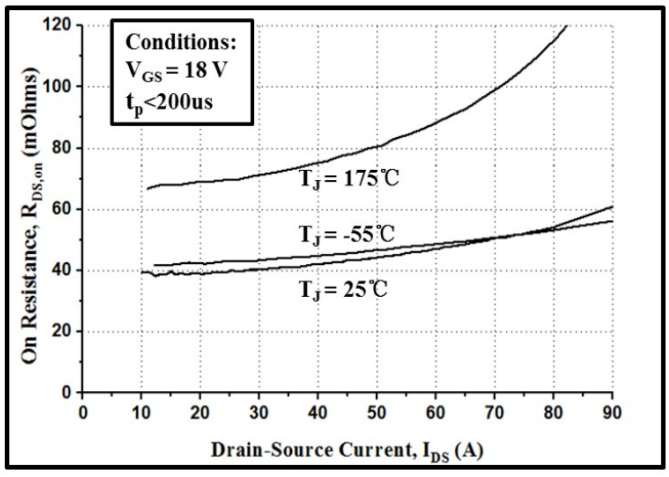


Figure 5. On-Resistance vs. Drain Current
For Various Temperatures

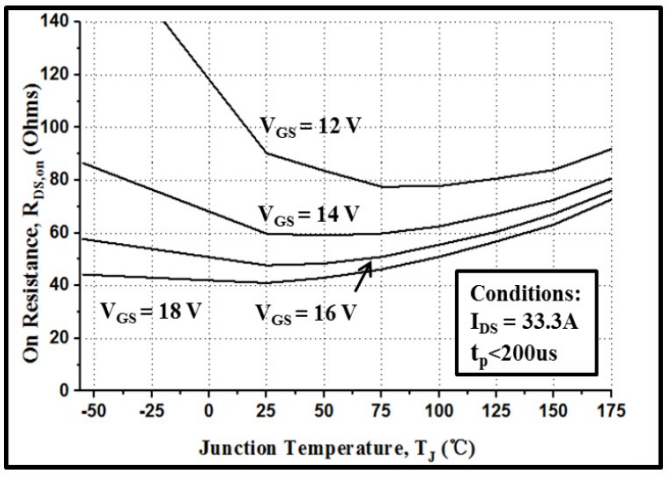


Figure 6. On-Resistance vs. Temperature
For Various Gate Voltage

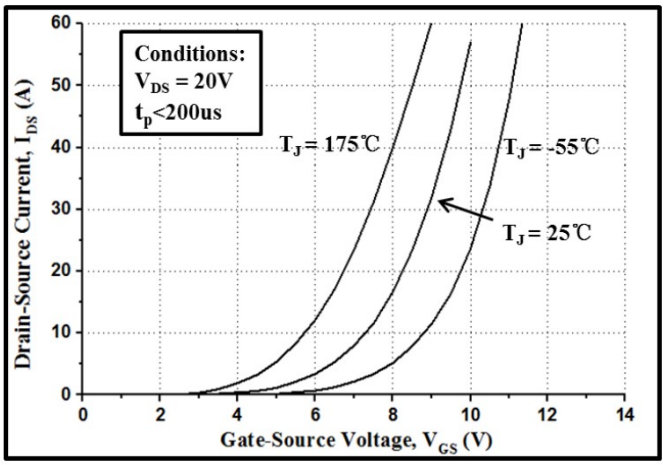


Figure 7. Transfer Characteristic for Various Junction Temperatures

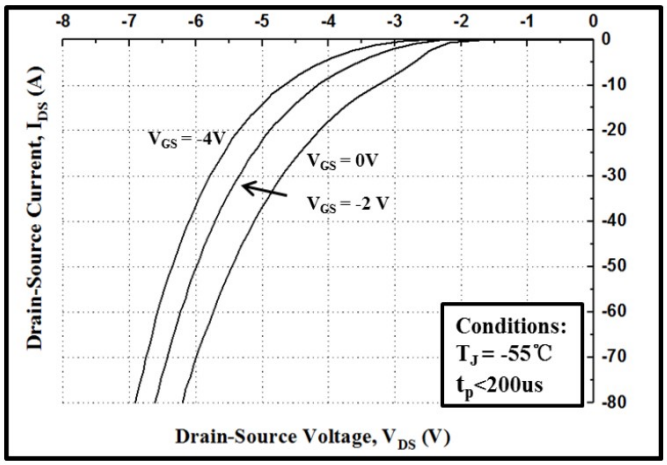


Figure 8. Body Diode Characteristic at -55℃

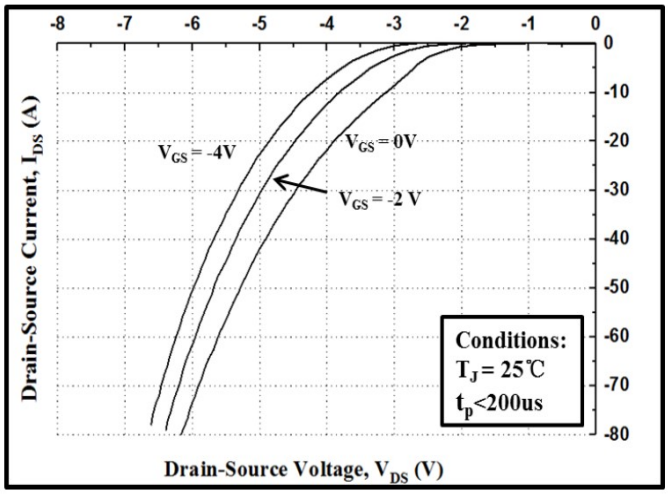


Figure 9. Body Diode Characteristic at 25℃

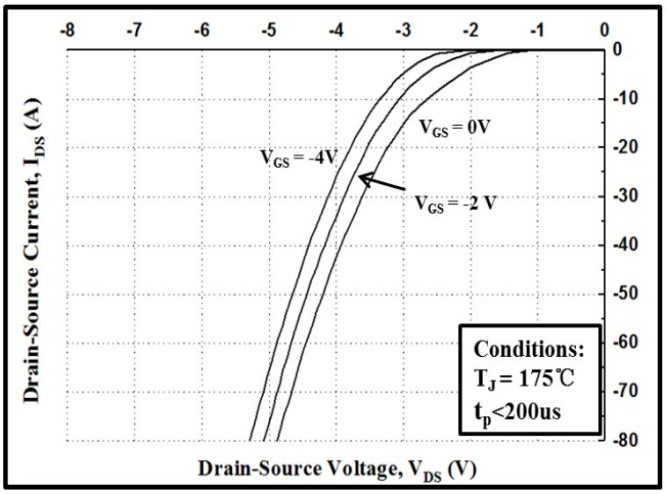


Figure 10. Body Diode Characteristic at 175℃

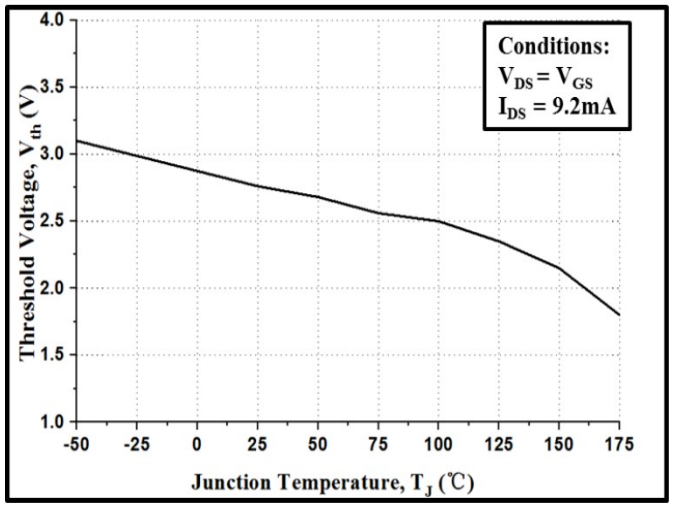


Figure 11. Threshold Voltage vs. Temperature

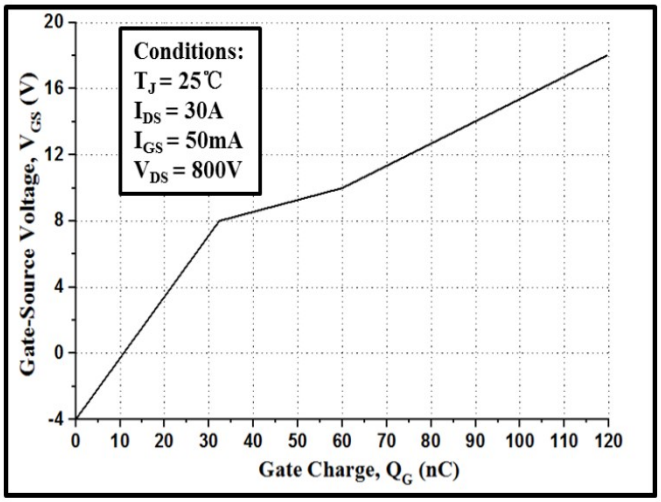


Figure 12. Gate Charge Characteristics

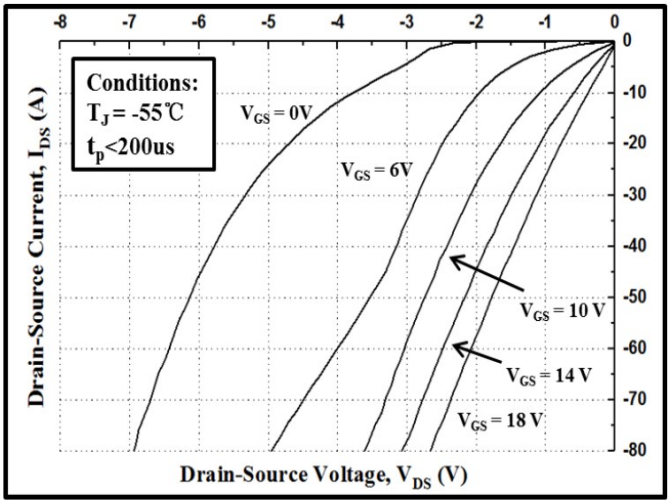


Figure 13. 3rd Quadrant Characteristic at -55℃

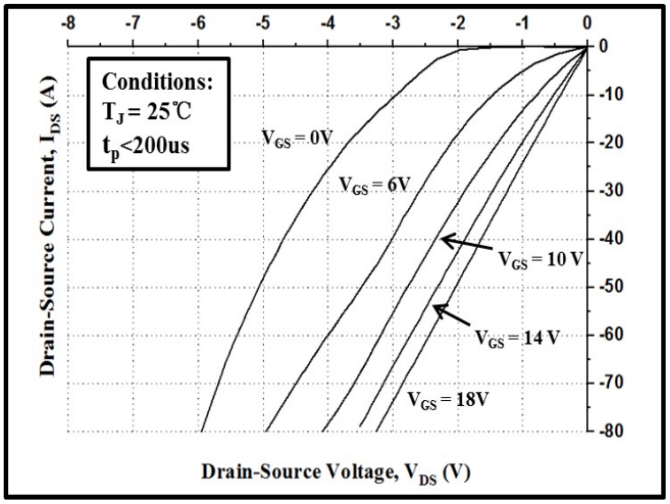


Figure 14. 3rd Quadrant Characteristic at 25℃

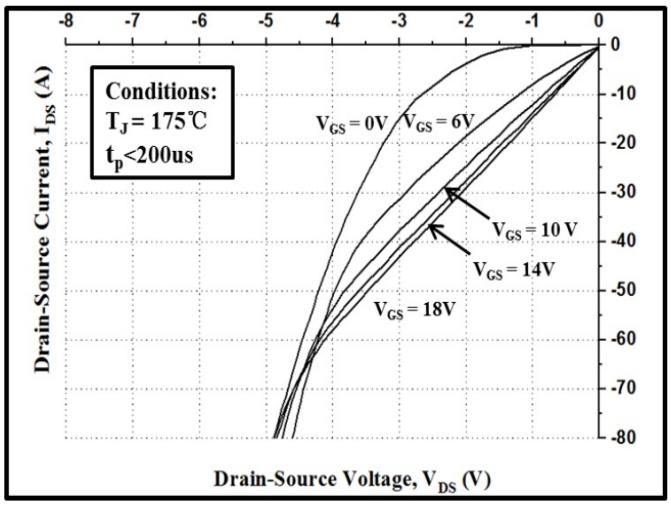


Figure 15. 3rd Quadrant Characteristic at 175 ℃

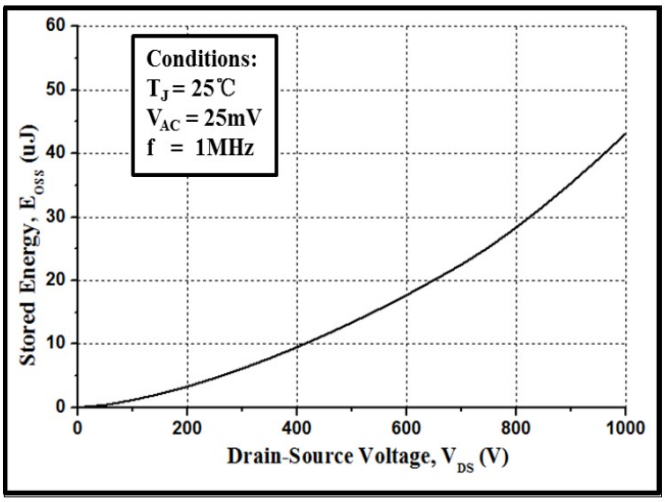


Figure16. Output Capacitor Stored Energy

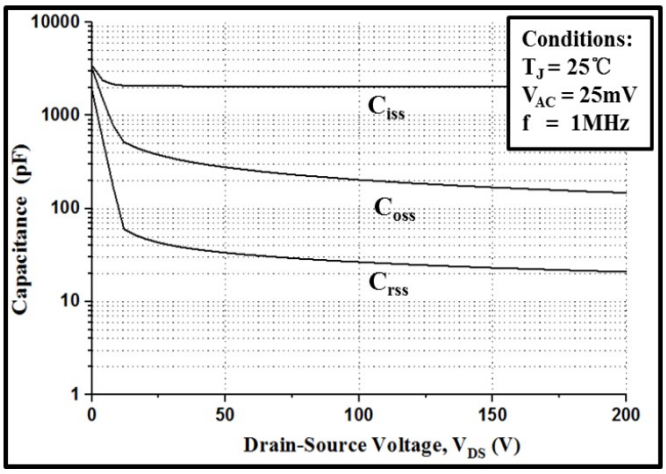


Figure 17. Capacitances vs. Drain-Source Voltage (0 - 200V)

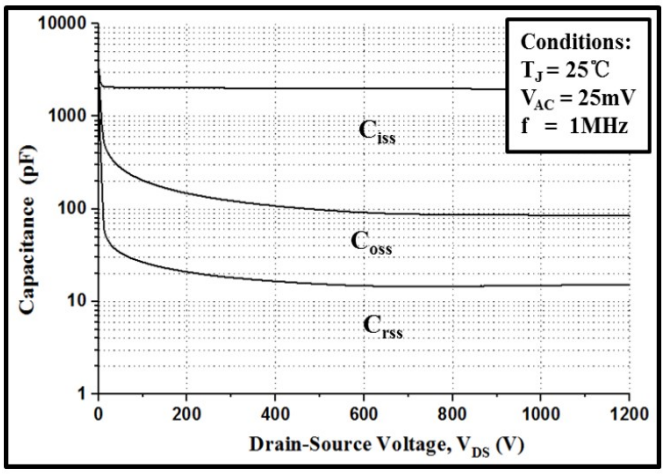


Figure 18. Capacitances vs. Drain-Source Voltage (0 - 1200V)

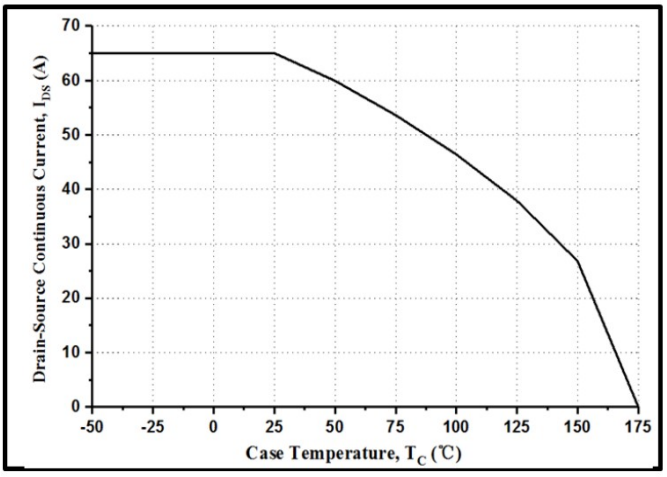


Figure 19. Continuous Drain Current Derating vs. Case Temperature

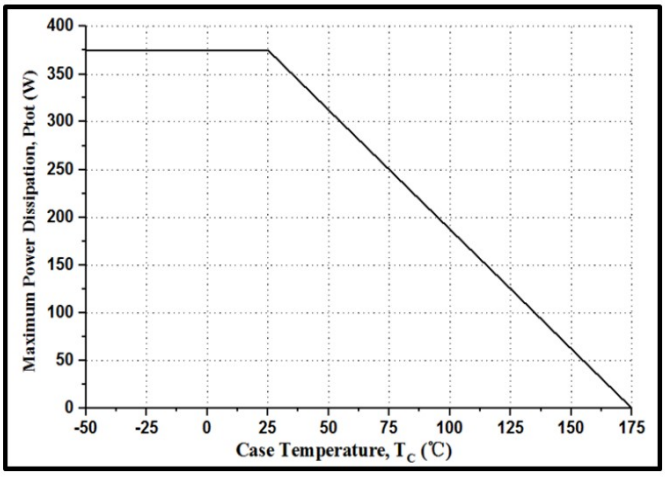


Figure 20. Maximum Power Dissipation Derating vs. Case Temperature

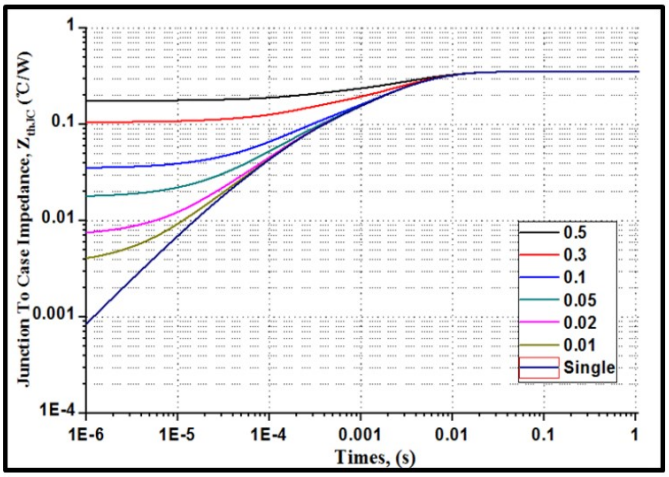


Figure 21. Transient Thermal Impedance (Junction - Case)

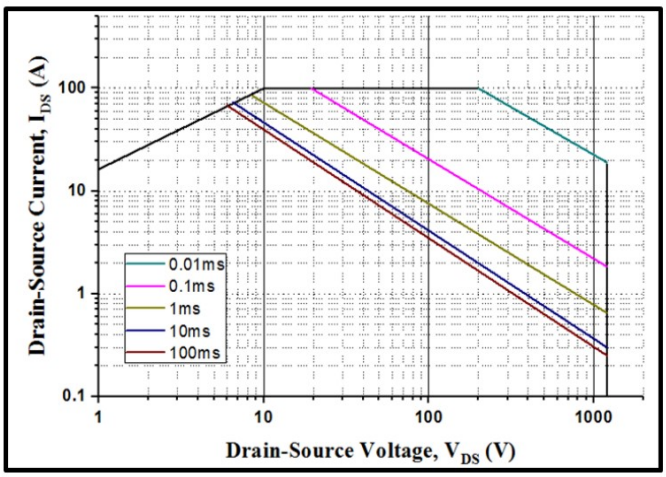


Figure22. Safe Operating Area

Test Circuit Schematic

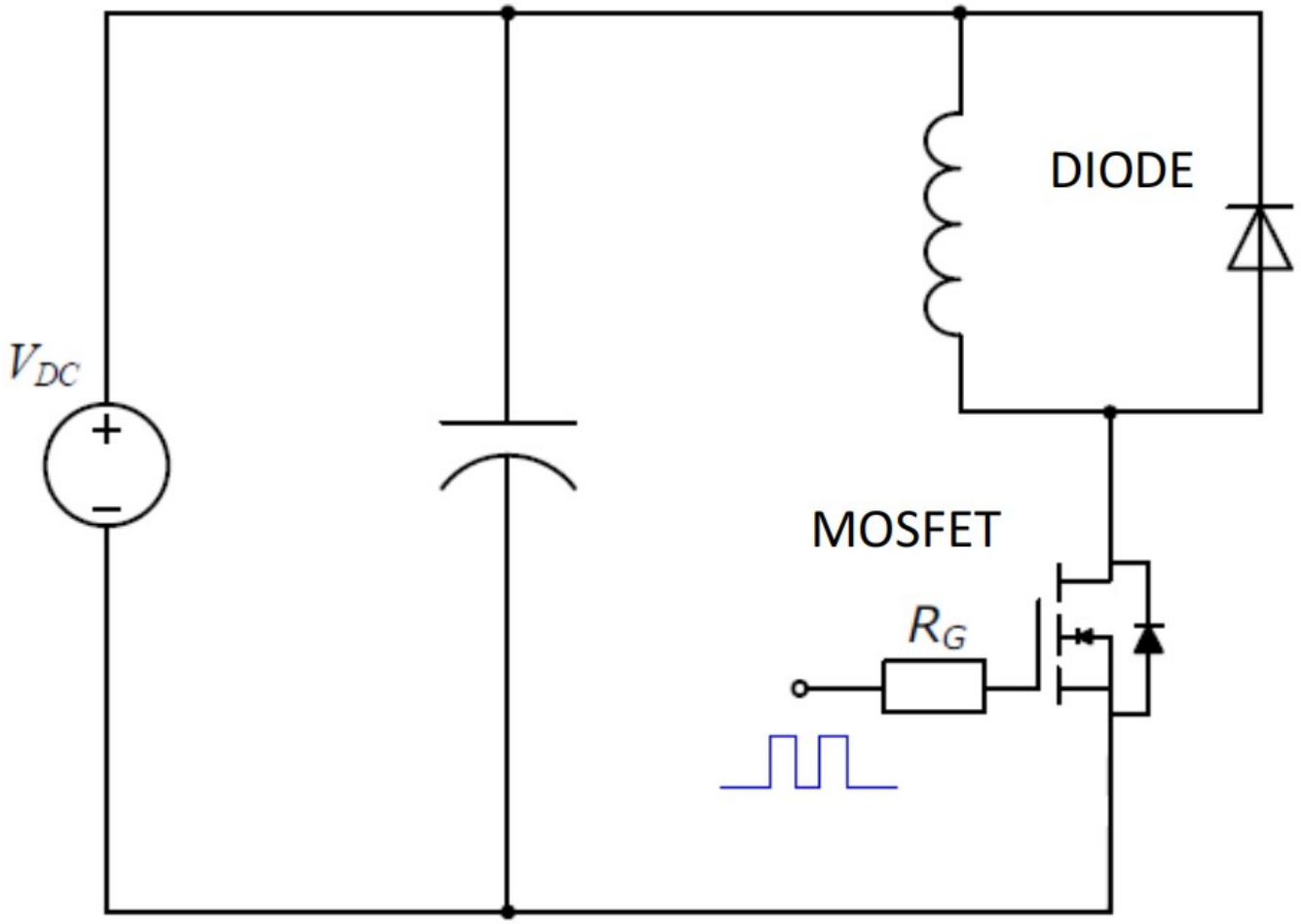
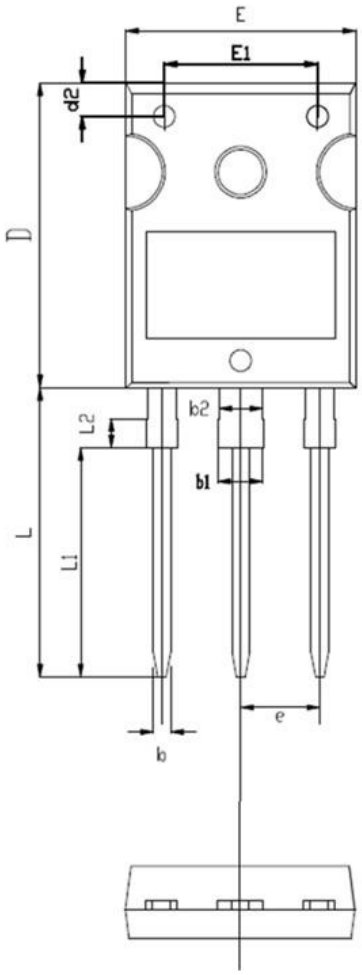
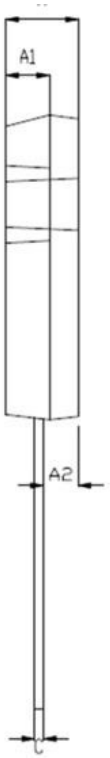
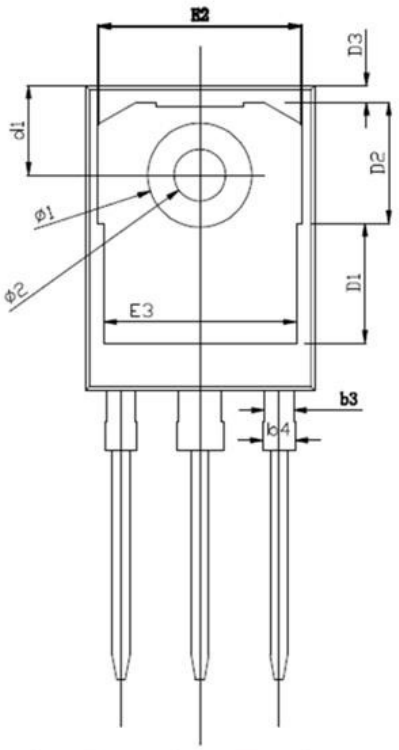


Figure 23. Clamped Inductive Switching Waveform Test Circuit

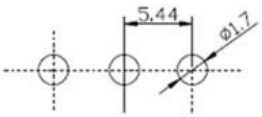
Package outline drawing(TO-247-3 Unit: mm)







RECOMMENDED LAND PATTERN



UNIT: mm

	MIN	NOM	MAX
A	4.80	5.00	5.20
A1	2.80	3.00	3.20
A2	2.26	2.41	2.56
b	1.10	1.20	1.30
b1	2.90	–	3.20
b2	2.90	3.00	3.10
b3	1.90	2.00	2.10
b4	2.00	–	2.20
c	0.50	0.60	0.70
D	20.80	21.00	21.20
D1		8.23	
D2		8.32	
D3		1.17	
d1	6.00	6.15	6.30
d2	2.20	2.30	2.40
E	15.60	15.80	16.00
E1		10.50	
E2		14.02	
E3		13.50	
e	5.34	5.44	5.54
L	19.72	19.92	20.12
L1		15.79	
L2		1.98	
ø1	7.10	7.19	7.30
ø2	3.50	3.60	3.70

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c.whose failuer to when properly used in accordance with instructions for used provided in the laeling,can be reasonably expected to result in significant injury to the user.

2.A critical component is any component of a life support device or system whose failure to system whose failure to perform can be reasonably expected to cause the failure of the life support device or system,or to affect its safety or effectiveness.

