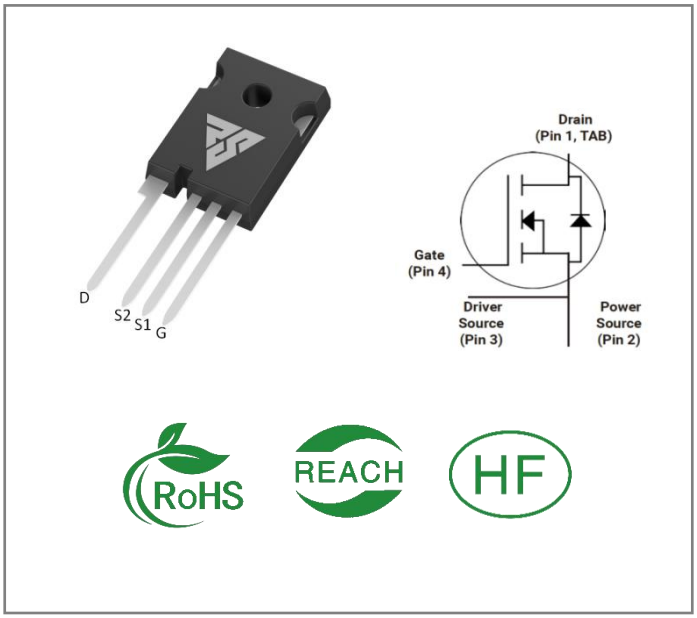
VDS	RDS(on)	ID@25℃
1200V	18mΩ	105A



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.
RSM120018Z	TO-247-4	RSM120018Z	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	-10/+25	V	Absolute maximum values	
VGSop	Gate - Source Voltage	-5/+20	V	Recommended operational values	
ID	Continuous Drain Current	105 74	A	VGS=18V, TC =25℃ VGS=18V, TC =100℃	
ID(pulse)	Pulsed Drain Current	220	A	Pulse width tp limited by TJmax	
PD	Power Dissipation	428	W	TC =25℃	
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	2.45	3.8	V	VGS= VDS, IDS=20mA,TC =25℃	
			1.6		V	VGS= VDS, IDS=20mA,TC =175℃	
IDSS	Zero Gate Voltage Drain Current	0	1	50	μA	VDS= 1200V, VGS=0V	
IGSS+	Gate-Source Leakage Current	0	1	200	nA	VGS=20V, VDS= 0V	
IGSS-	Gate-Source Leakage Current	-200	1	0	nA	VGS=-5V, VDS= 0V	
RDS(on)	Drain-Source on-state Resistance		18	26	mΩ	VGS=20V, ID =50A, TC =25℃	
			34			VGS=20V, ID =50A, TC =175℃	
Ciss	Input Capacitance		4800		pF	VGS=0V, VDS=1000 V, f=1MHz, VAC=25 mV	
Coss	Output Capacitance		225				
Crss	Reverse Transfer Capacitance		10				
EON	Turn-On Switching Energy		400		μJ	VDS =800V, VGS =-5/20V, ID = 50A, RG(ext) = 2Ω, L=200μH	
EOFF	Turn-Off Energy		135				
td(on)	Turn-On Delay Time		15		ns		
tr	Rise Time		22				
td(off)	Turn-Off Delay Time		45				
tf	Fall Time		11				
RG(int)	Internal Gate Resistance		3.6		Ω	f=1 MHz, VAC=25mV	
Qgs	Gate to Source Charge		235		nC	VDS=800V, VGS=-5/20V ID =50A	
Qgd	Gate to Drain Charge		62		nC		
Qg	Total Gate Charge		75				

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

Symbol	Parameter	Typ.	Max	Unit	Test Conditions	Note
VSD	Diode Forward Voltage	4.3		V	VGS=-5V, ISD =25 A, TJ = 25℃	
		3.8		V	VGS=-5V, ISD=25 A, TJ= 175℃	
IS	Continuous Diode Forward Current		91	A	VGS=-5V,TC= 25℃	
trr	Reverse Recovery time	30		ns	ISD= 50A, VR = 800V	
Qrr	Reverse Recovery Charge	970		nC		
Irrm	Peak Reverse Recovery Current	53		A		

Thermal Characteristics (TJ= 25℃ unless otherwise specified)

Symbol	Parameter	Typ.	Unit	Test Conditions	Note
RθJC	Thermal Resistance from Junction to Case	0.27	℃/W		
RθJA	Thermal Resistance From Junction to Ambient	40			

Typical Feature Curve

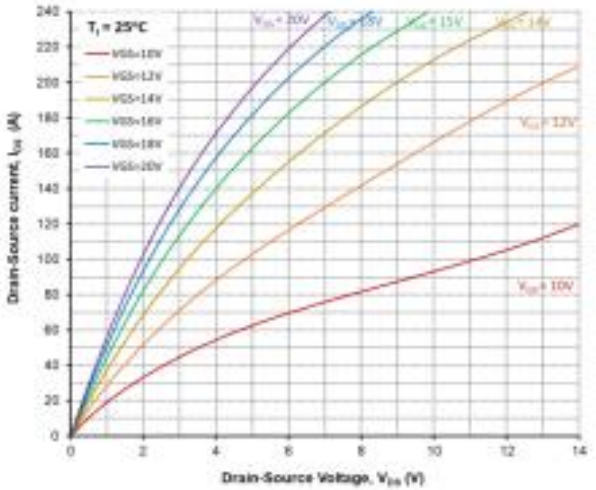


Figure 1. Output Characteristics, T_J = 25ºC

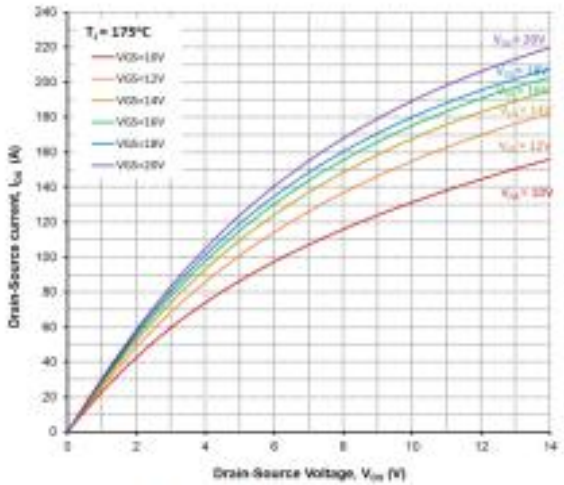


Figure 2. Output Characteristics, T_J = 175ºC

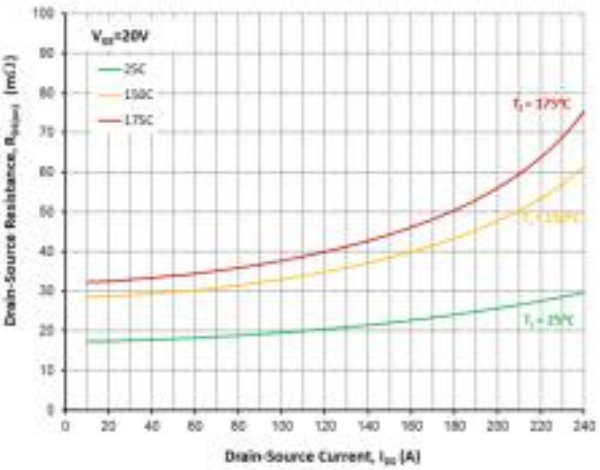


Figure 3. On-Resistance vs. Drain Current For Various Temperatures

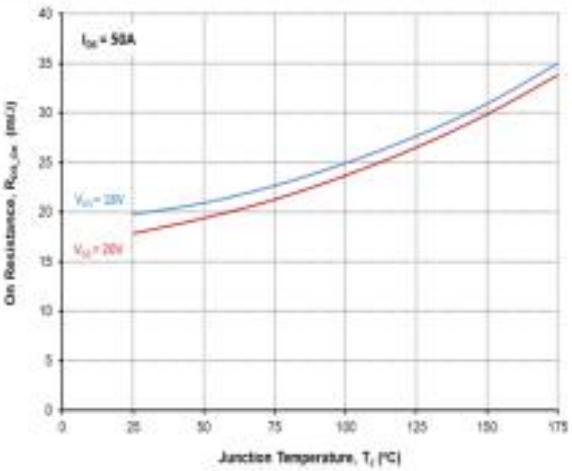


Figure 4. On-Resistance vs. Temperature

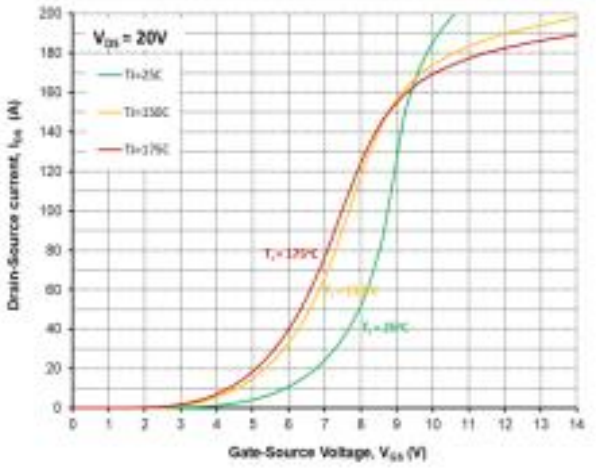


Figure 5. Transfer Characteristic For Various Junction Temperatures

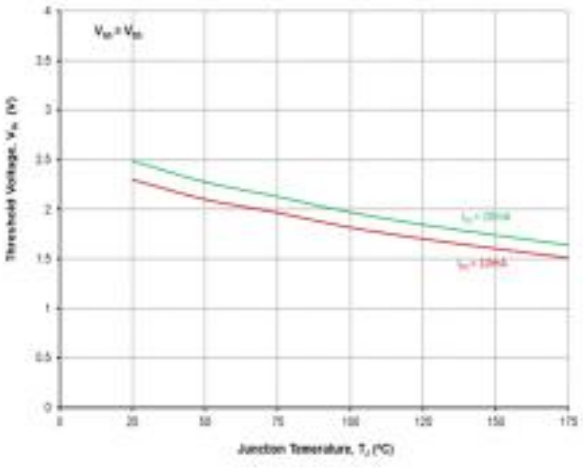


Figure 6. Threshold Voltage vs. Temperature

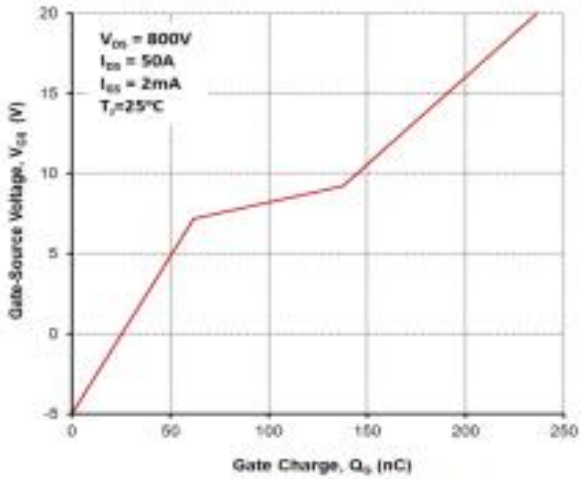


Figure 7. Gate Charge Characteristics

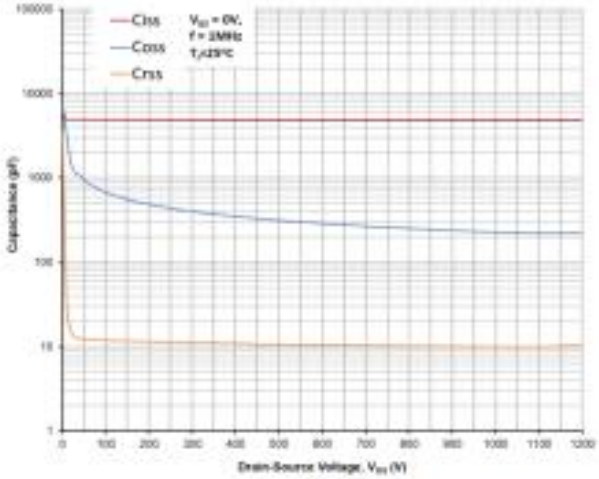


Figure 8. Capacitances vs. Drain-Source Voltage (0-1200V)

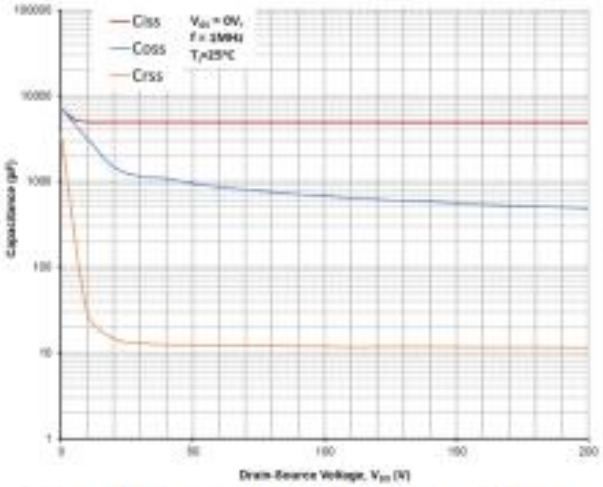


Figure 9. Capacitances vs. Drain-Source Voltage (0-200V)

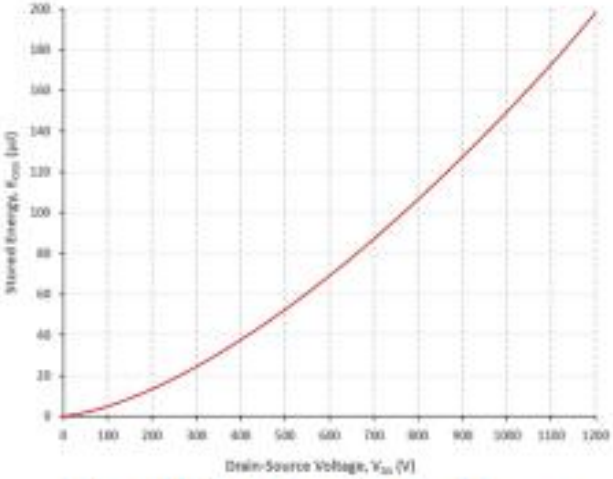


Figure 10. Output Capacitor Stored Energy

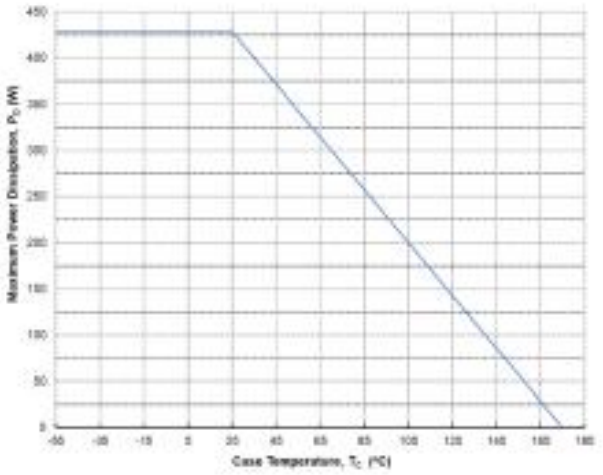


Figure 11. Maximum Power Dissipation Derating vs. Case Temperature

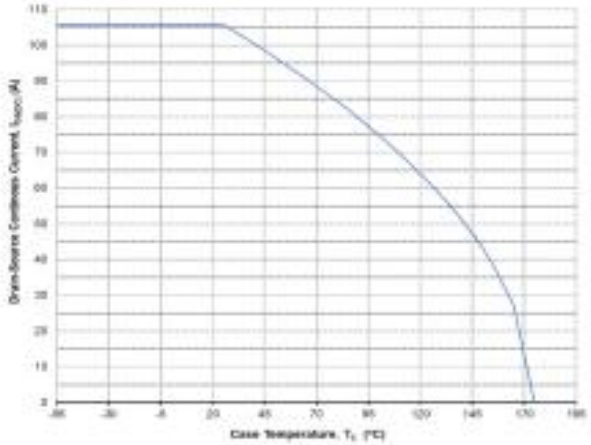


Figure 12. Continuous Drain Current Derating vs. Case Temperature

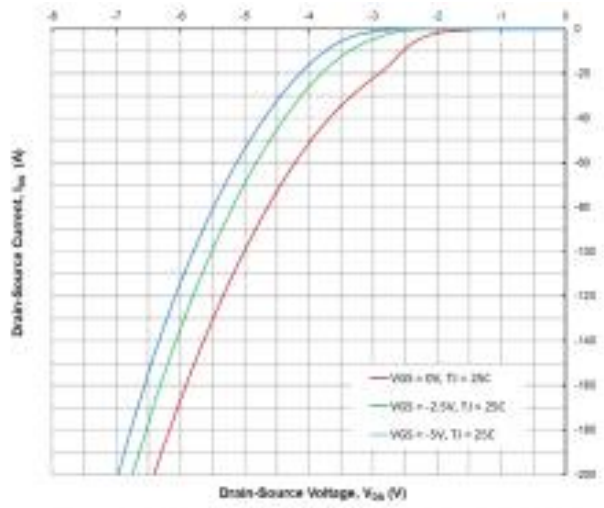


Figure 13. Body Diode Characteristics @ 25°C

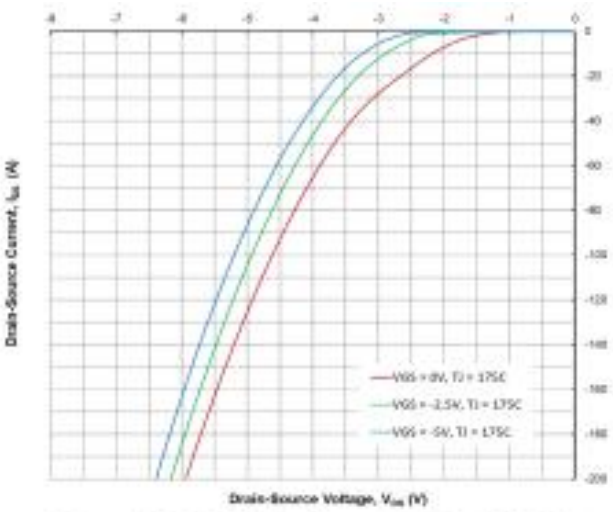


Figure 14. Body Diode Characteristics @ 175°C

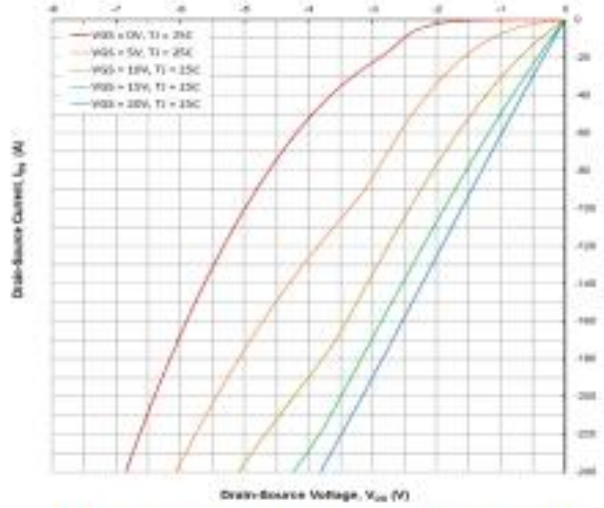


Figure 15. 3rd Quadrant Characteristics @ 25°C

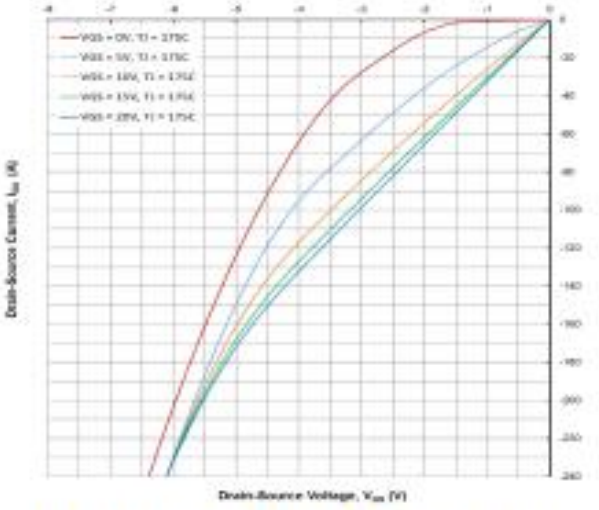


Figure 16. 3rd Quadrant Characteristics @ 175°C

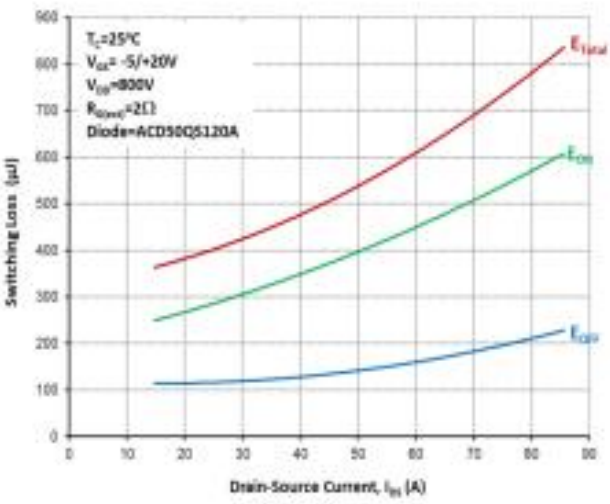


Figure 17. Clamped Inductive Switching Energy vs. Drain Current

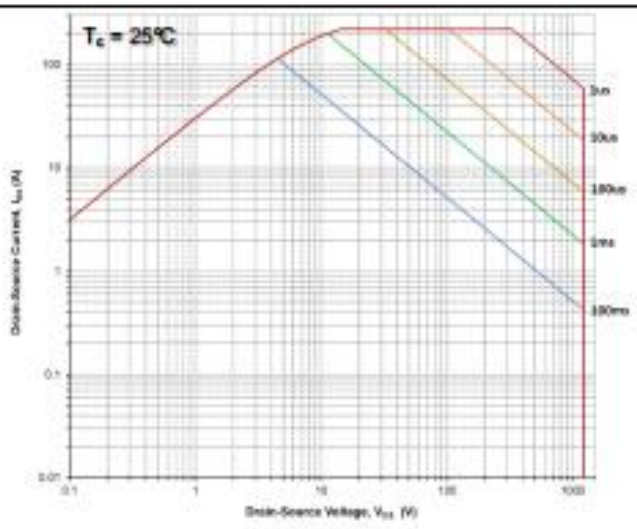


Figure 18. Safe Operating Area

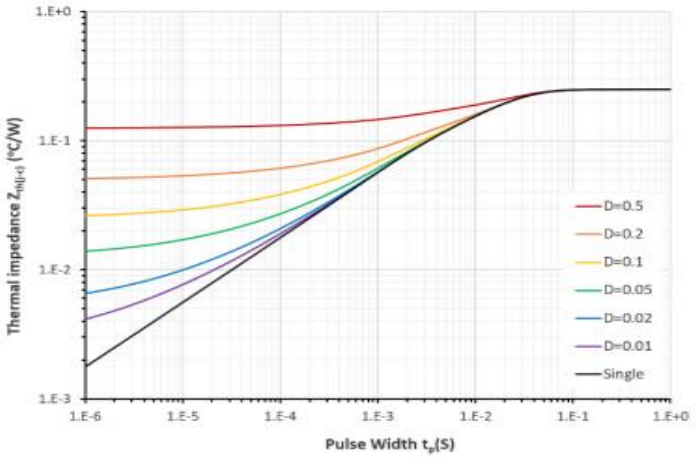
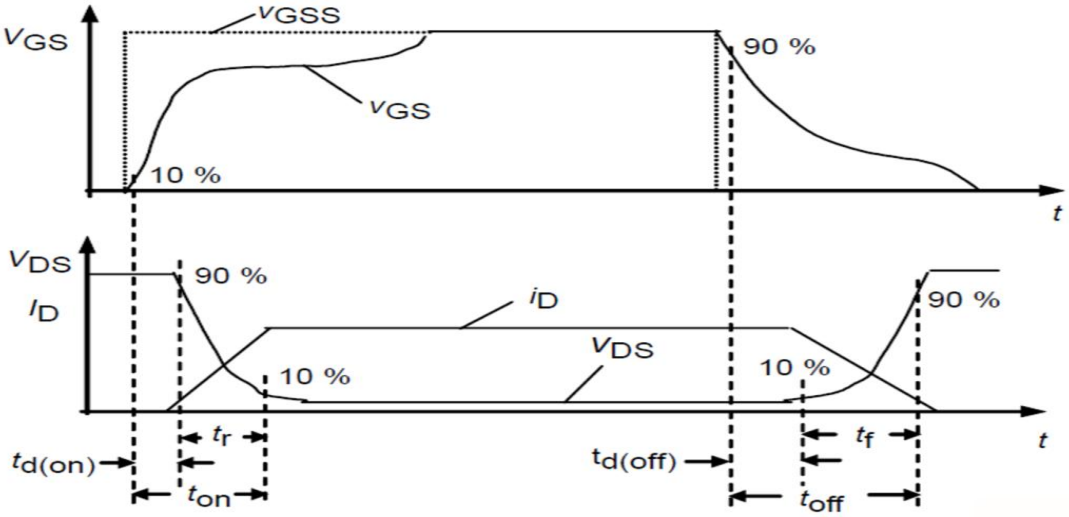
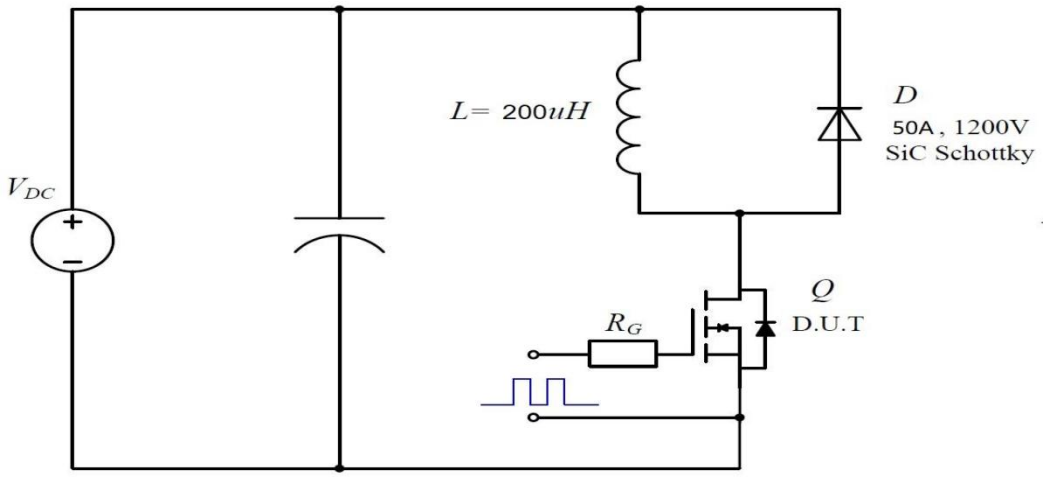


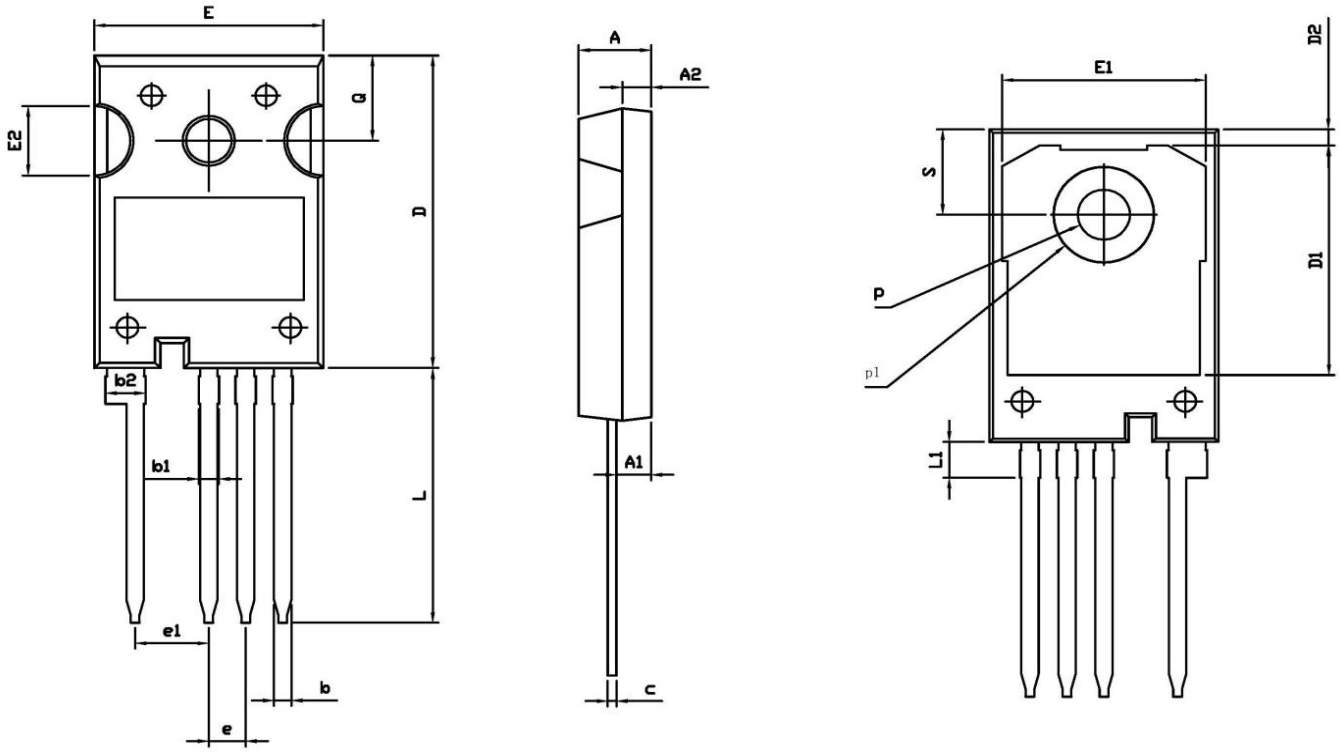
Figure 19. Transient Thermal Impedance (Junction – Case)

Switching Times Definition and Test Circuit

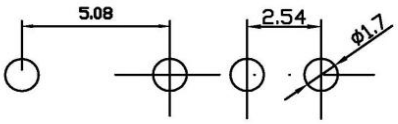




Package outline drawing(TO-247-4 Unit: mm)



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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