Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
1200V	60mΩ@18V	25A

合肥矽普半导体
Siliup Semiconductor Technology Co.Ltd
技术 品质 服务
www.siliup.com

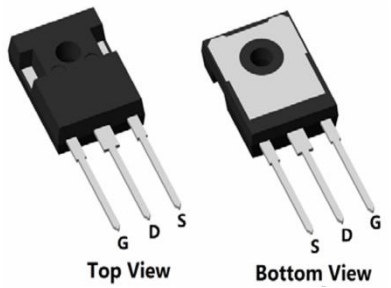
Feature

- High Speed Switching with Low Capacitances
- High Blocking Voltage with Low RDS(on)
- Easy to Parallel
- Simple to Drive
- RoHS Compliant

Applications

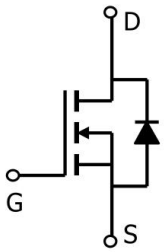
- Power Factor Correction Modules
- Switch Mode Power Supplies
- Photovoltaic Inverter
- UPS Power Supply
- High Voltage DC/DC Converter

Package

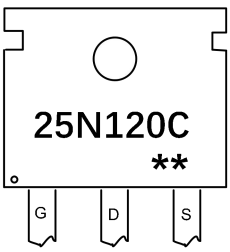


TO-247(1:G 2:D 3:S)

Circuit diagram



Marking



25N120C :Device Code
**** :Week Code

Order Information

Device	Package	Unit/Tube
SP25N120CTF	TO-247	30

Absolute maximum ratings (Ta=25℃,unless otherwise noted)

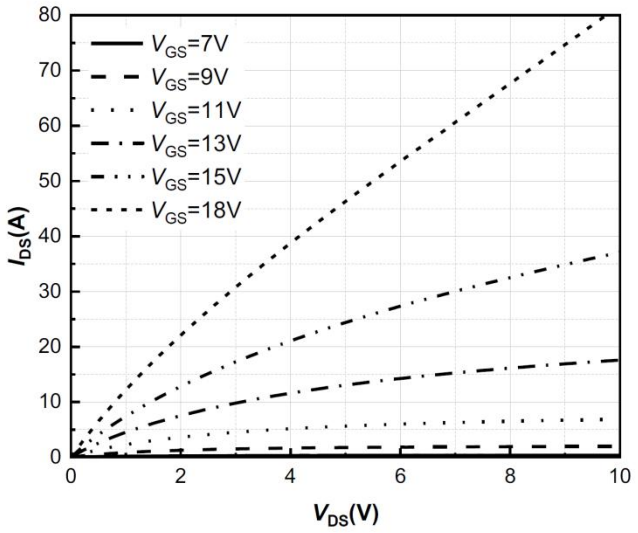
Parameter	Symbol	Rating	Units
Drain-Source Voltage	V_{DS}	1200	V
Gate-Source Voltage	V_{GSMAX}	-8/+22	V
Recommend Gate-Source Voltage	V_{GSop}	-4/+18	V
Continuous Drain Current(Tc=25℃)	I_D	52	A
Continuous Drain Current(Tc=100℃)	I_D	25	A
Pulsed Drain Current	I_{DM}	80	A
Single Pulse Avalanche Energy[1]	E_{AS}	1125	mJ
Power Dissipation(Tc=25℃)	P_D	171	W
Power Dissipation(Tc=100℃)	P_D	68	W
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	0.73	℃/W
Storage Temperature Range	T_{STG}	-55 to 175	℃
Operating Junction Temperature Range	T_J	-55 to 175	℃

Electrical characteristics (Ta=25℃, unless otherwise noted)

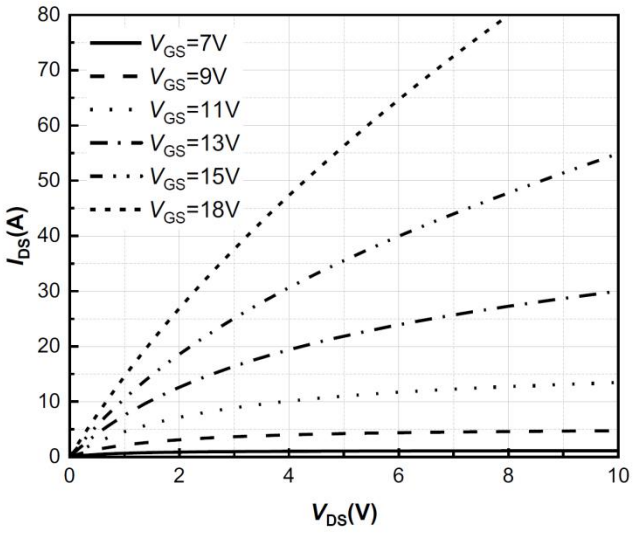
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	VGS=0V , ID=250uA	1200	-	-	V
Drain-Source Leakage Current	I_{DSS}	VDS=1200V , VGS=0V , TJ=25℃	-	1	-	uA
Gate-Source Leakage Current	I_{GSS}	VGS=18V , VDS=0V	-	-	250	nA
Gate Threshold Voltage	$V_{GS(th)}$	VGS=VDS , ID =5mA, T_j=25℃	2	2.5	4	V
		VGS=VDS , ID =5mA, T_j=100℃	-	1.8	-	
Static Drain-Source On-Resistance	$R_{DS(ON)}$	VGS=18V , ID=20A, T_j=25℃	-	60	75	mΩ
		VGS=18V , ID=20A, T_j=150℃	-	90	-	
Dynamic characteristics						
Input Capacitance	C_{iss}	VDS=1000V , VGS=0V , f=1MHz	-	1920	-	pF
Output Capacitance	C_{oss}		-	80	-	
Reverse Transfer Capacitance	C_{rss}		-	5	-	
Switching Characteristics						
Total Gate Charge	Q_g	VDS=800V , VGS=-4/+18V , ID=20A	-	87	-	nC
Gate-Source Charge	Q_{gs}		-	29	-	
Gate-Drain Charge	Q_{gd}		-	31	-	
Rise Time	T_r		-	75	-	
Turn-Off Delay Time	$T_{d(off)}$		-	89	-	
Fall Time	T_f		-	29	-	
Reverse Diode Characteristics						
Diode Forward Voltage	V_{SD}	VGS=-4V , I_{SD}=20A , T_J=25℃	-	4.5	-	V
		VGS=-4V , I_{SD}=20A , T_J=150℃	-	4	-	
Continuous Diode Forward Current	I_S	VGS=-4V, Tc=25°C	-	52	-	A
		VGS=-4V, Tc=100°C	-	25	-	
Reverse Recovery Time	trr	VGS=-4V, I_{SD}=20A, V_R=800V, di/dt=3700A/μs	-	32	-	nS
Reverse Recovery Charge	Qrr		-	265	-	nC
Peak Reverse Recovery Current	Irrm		-	16	-	A

Note :
The test condition is VDD=50V,VGS=10V,L=10mH,RG=25Ω

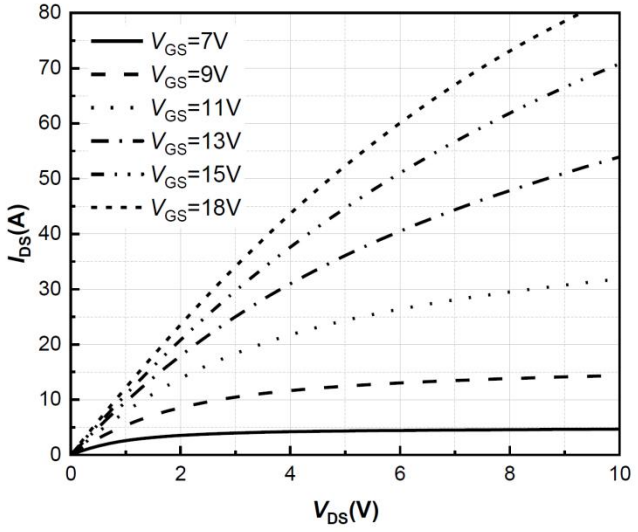
Typical Characteristics



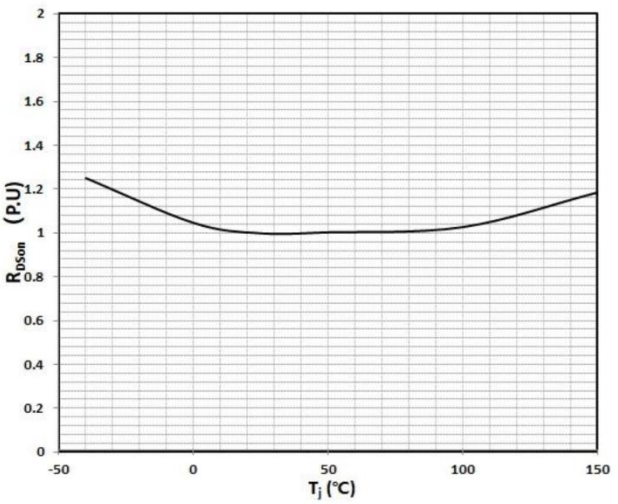
Output Characteristics T_j=-40°C



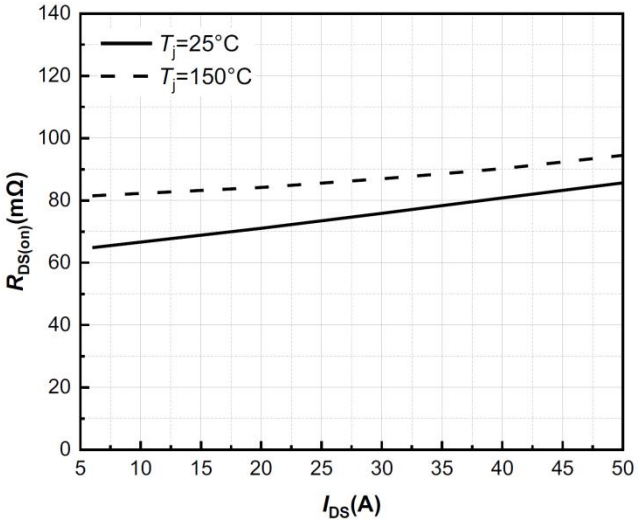
Output Characteristics T_j=25°C



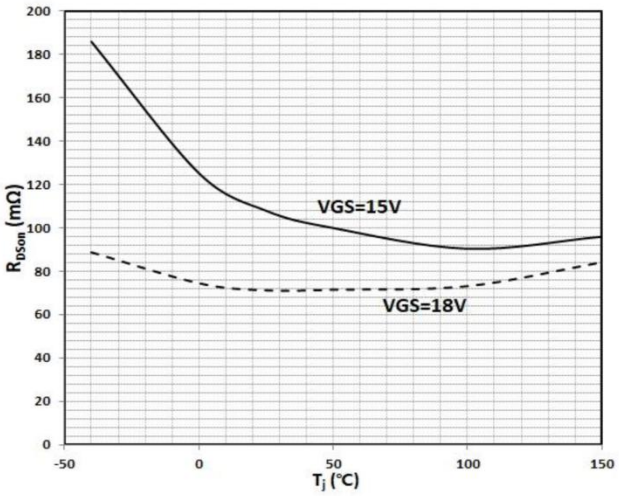
Output Characteristics T_j=150°C



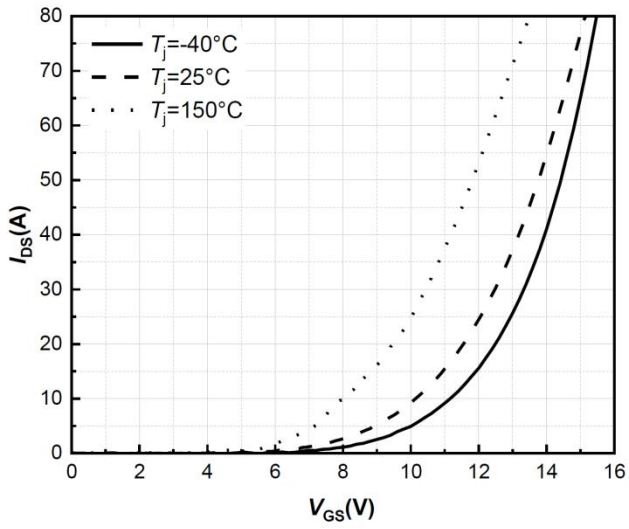
Normalized On-Resistance vs. Temperature



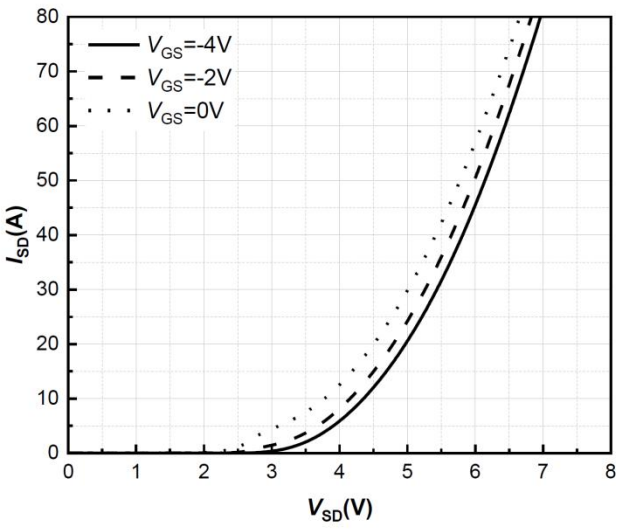
On-Resistance vs. Drain Current For Various Temperatures



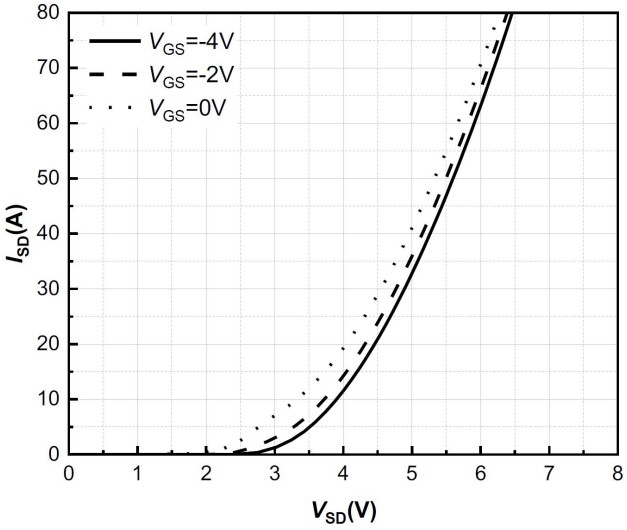
On-Resistance vs. Temperature For Various Gate Voltage



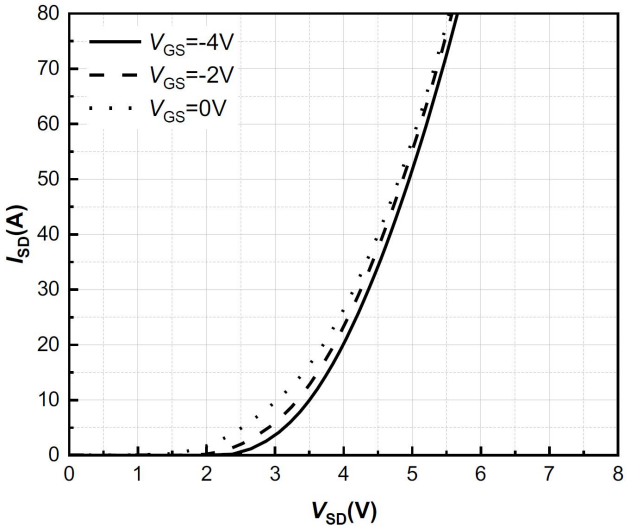
Transfer Charactristic for Various Junction Temperature V_{GS}=20V



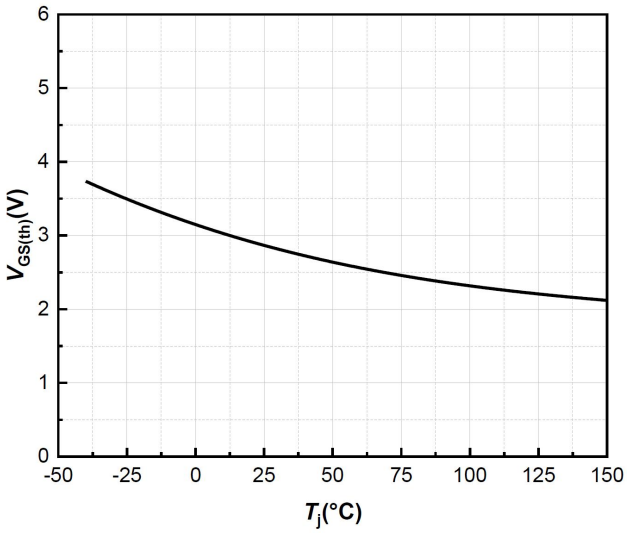
Body Diode Characteristic T_j=-40°C



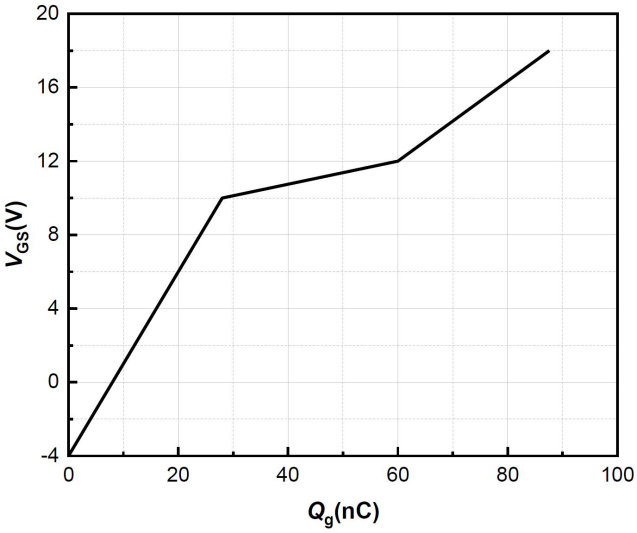
Body Diode Characteristic T_j=25°C



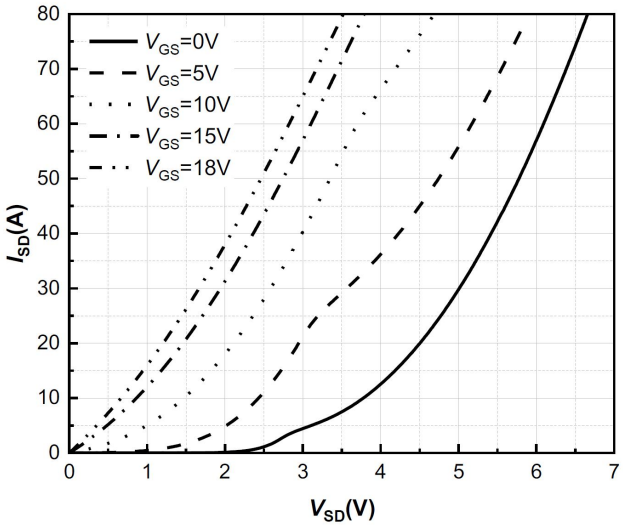
Body Diode Characteristic T_j=150°C



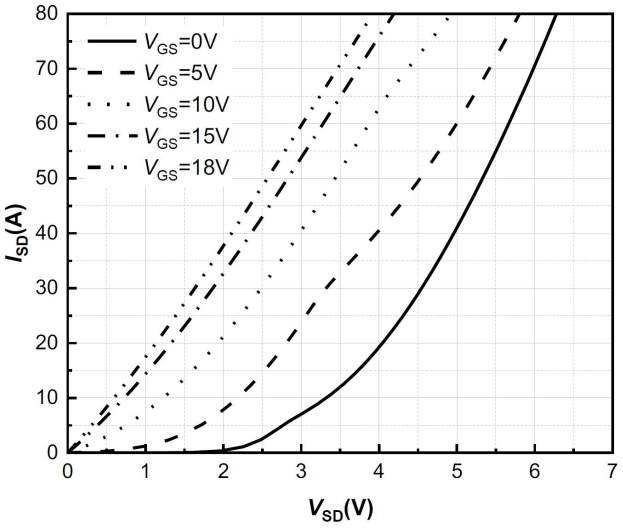
Threshold Voltage vs. Temperature



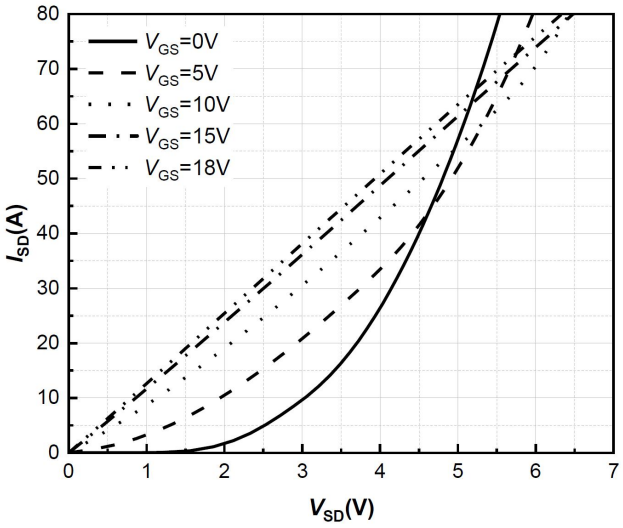
Gate Charge Characteristics



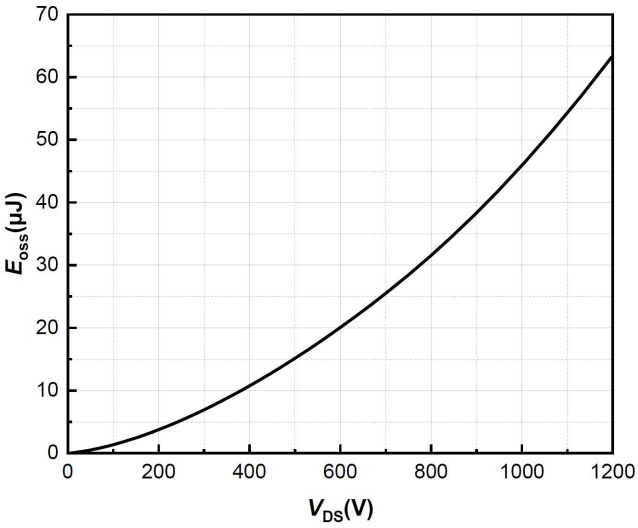
3rd Quadrant Characteristic T_j=-40°C



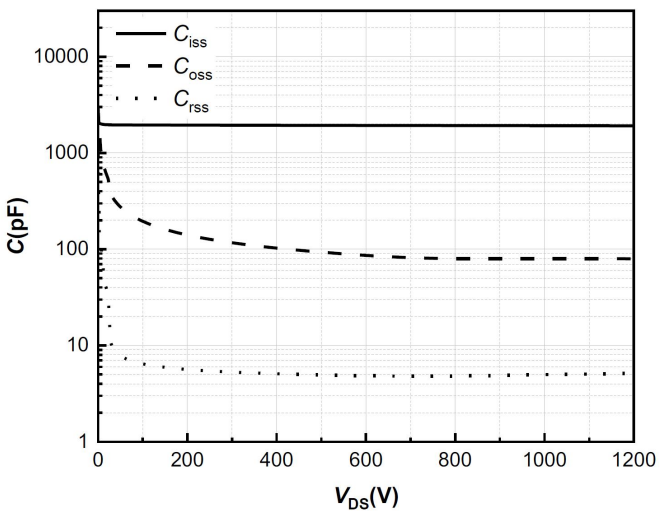
3rd Quadrant Characteristic T_j=25°C



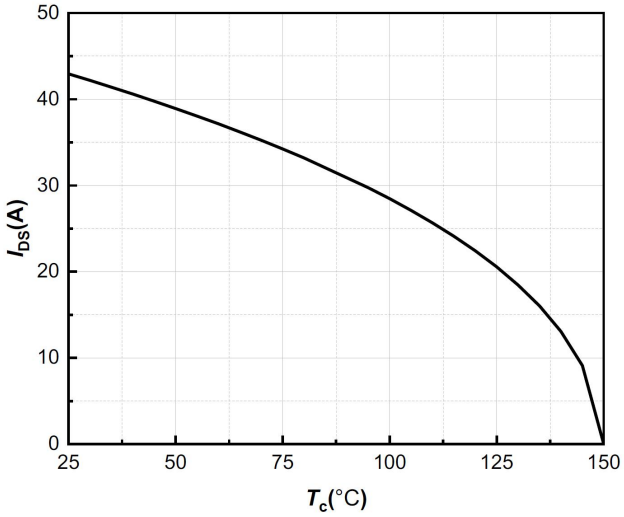
3rd Quadrant Characteristic T_j=150°C



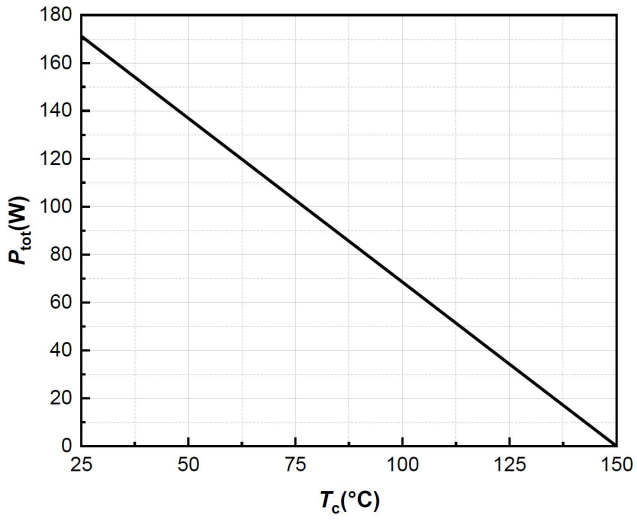
Output Capacitor Stored Energy



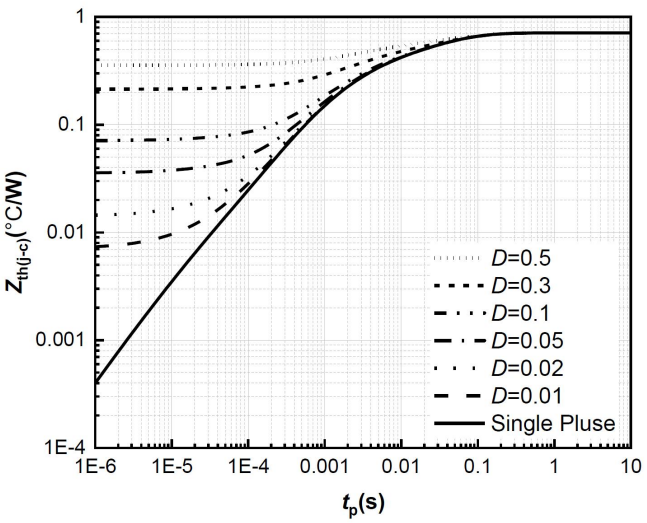
Capacitances vs. Drain-Source



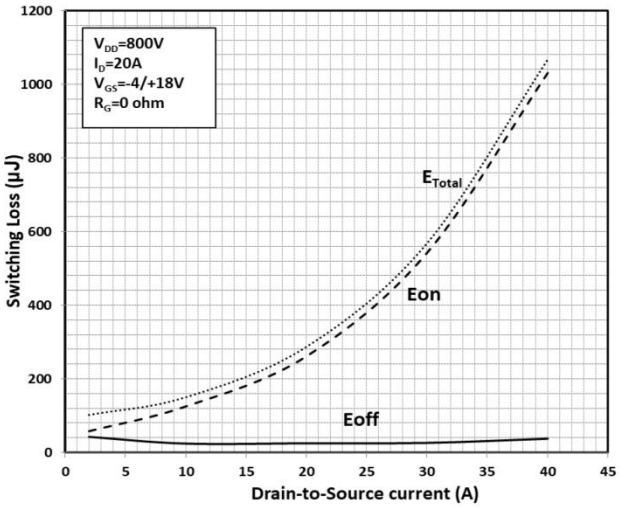
Continuous Drain Current Derating vs. Case Temperature



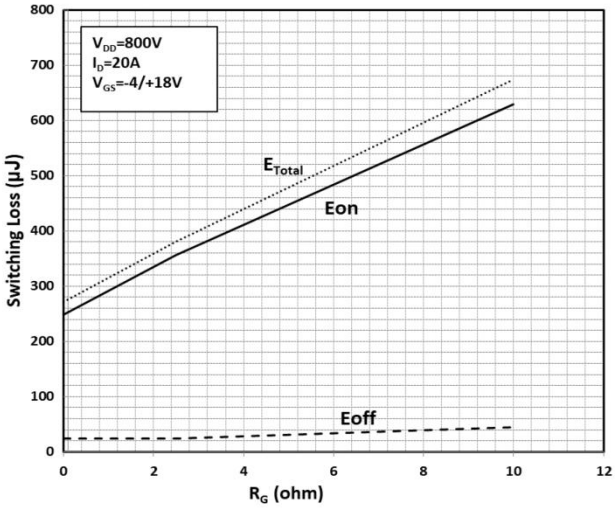
Maximum Power Dissipation Derating vs. Case Temperature



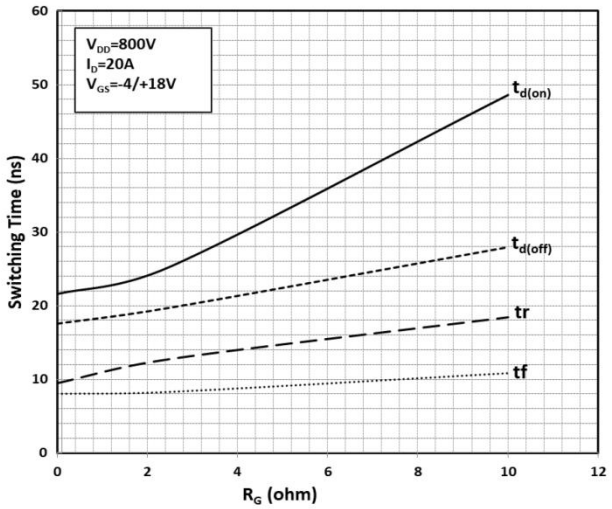
Transient Thermal Impedance



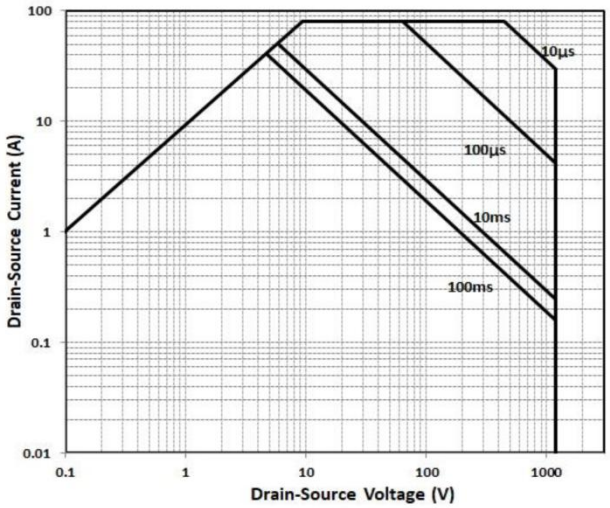
Clamped Inductive Switching Energy vs. Drain Current



Clamped Inductive Switching Energy vs. R_G

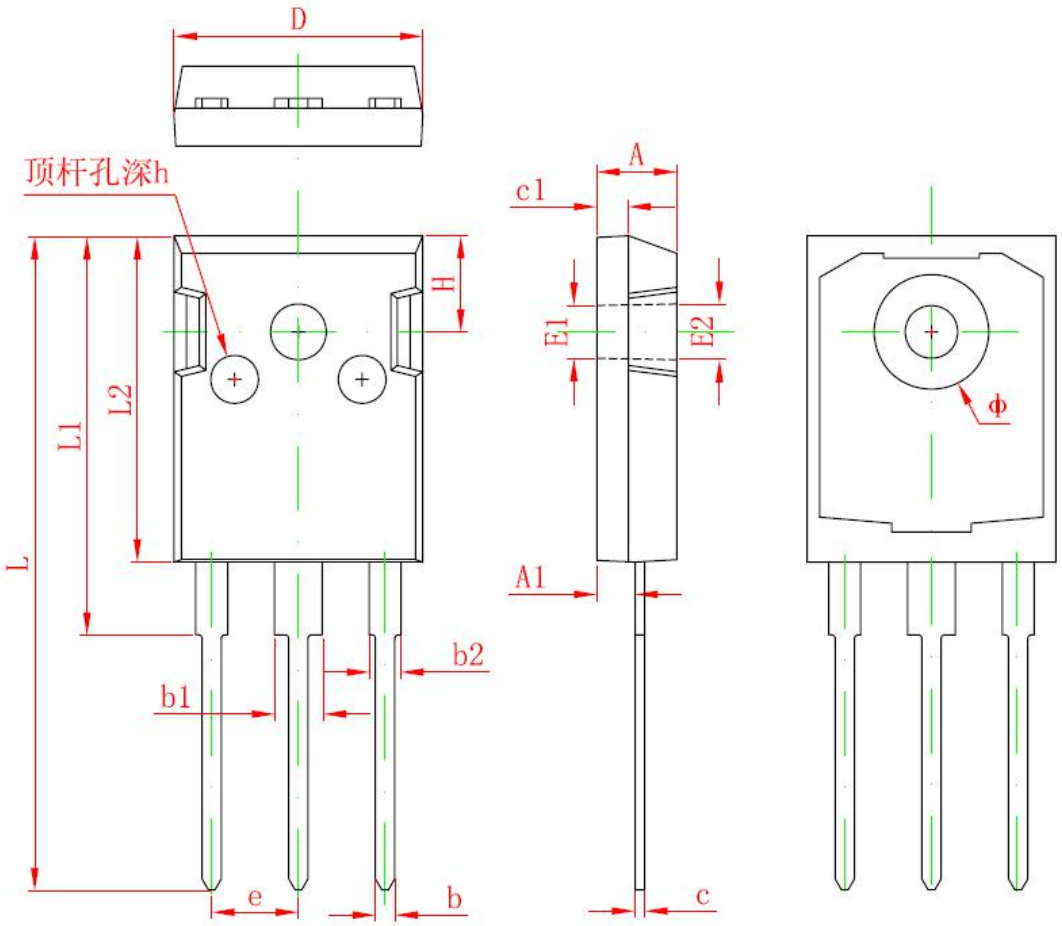


Switching Times vs. R_G



Safe Operating Area

TO-247 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.850	5.150	0.191	0.200
A1	2.200	2.600	0.087	0.102
b	1.000	1.400	0.039	0.055
b1	2.800	3.200	0.110	0.126
b2	1.800	2.200	0.071	0.087
c	0.500	0.700	0.020	0.028
c1	1.900	2.100	0.075	0.083
D	15.450	15.750	0.608	0.620
E1	3.500 REF.		0.138 REF.	
E2	3.600 REF.		0.142 REF.	
L	40.900	41.300	1.610	1.626
L1	24.800	25.100	0.976	0.988
L2	20.300	20.600	0.799	0.811
Φ	7.100	7.300	0.280	0.287
e	5.450 TYP.		0.215 TYP.	
H	5.980 REF.		0.235 REF.	
h	0.000	0.300	0.000	0.012