

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
1200V	32mΩ@18V	52A



合肥矽普半导体

Siliup Semiconductor Technology Co., Ltd

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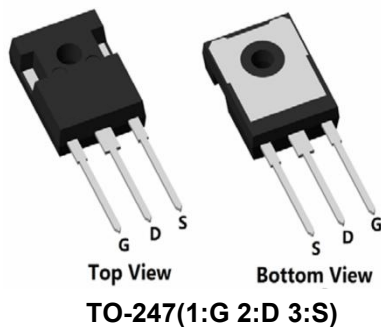
Feature

- High Speed Switching with Low Capacitances
- High Blocking Voltage with Low $R_{DS(on)}$
- Easy to Parallel
- Simple to Drive
- RoHS Compliant

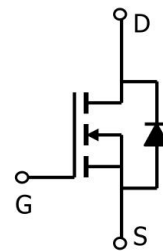
Applications

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

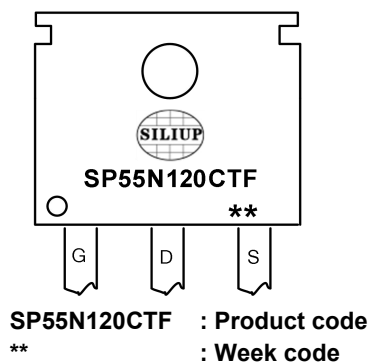
Package



Circuit diagram



Marking



Order Information

Device	Package	Unit/Tube
SP55N120CTF	TO-247	30

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

Parameter	Symbol	Rating	Units
Drain-Source Voltage	V_{DS}	1200	V
Gate-Source Voltage	$V_{GS\text{MAX}}$	-10/+22	V
Recommend Gate-Source Voltage	V_{GSop}	-5/+18	V
Continuous Drain Current(Tc=25°C)	I_D	78	A
Continuous Drain Current(Tc=100°C)	I_D	52	A
Pulsed Drain Current	I_{DM}	158	A
Single Pulse Avalanche Energy ¹	E_{AS}	1150	mJ
Power Dissipation(Tc=25°C)	P_D	357	W
Power Dissipation(Tc=100°C)	P_D	238	W
Thermal Resistance Junction-Case	$R_{\theta JC}$	0.42	°C/W
Storage Temperature Range	T_{STG}	-55 to 175	°C
Operating Junction Temperature Range	T_J	-55 to 175	°C

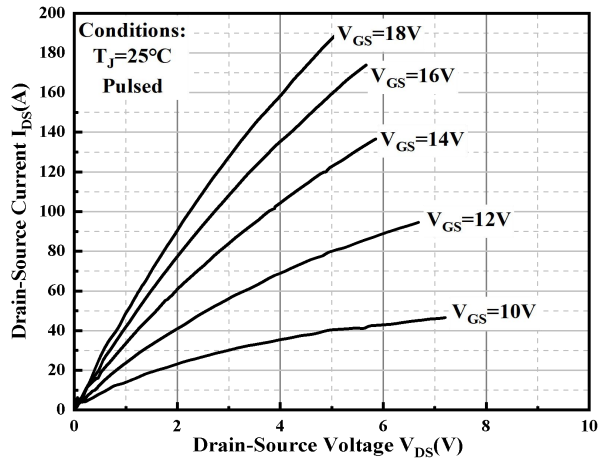
Electrical characteristics (Ta=25°C, unless otherwise noted)

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	IDSS	VDS=1200V, VGS=0V, TJ=25℃	-	1	100	uA
Gate-Source Leakage Current	IGSS	VGS=18V , VDS=0V, TJ=25℃	-	1	100	nA
Gate Threshold Voltage	VGS(th)	VGS=VDS , ID =11.5mA, TJ=25℃	2.0	2.8	4.0	V
		VGS=VDS , ID =11.5mA, TJ=175℃	-	2.3	-	
Static Drain-Source On-Resistance	RDS(ON)	VGS=18V , ID=40A, TJ=25℃	-	32	40	mΩ
		VGS=18V , ID=40A, TJ=175℃	-	52	-	
Dynamic characteristics						
Input Capacitance	Ciss	VDS=1000V , VGS=0V , f=100KHz	-	3177	-	pF
Output Capacitance	Coss		-	142	-	
Reverse Transfer Capacitance	Crss		-	13	-	
Total Gate Charge	Qg	VDS=800V , VGS= -5/+18V , ID=40A	-	139	-	nC
Gate-Source Charge	Qgs		-	42	-	
Gate-Drain Charge	Qgd		-	47	-	
Switching Characteristics						
Turn-On Delay Time	Td(on)	VDS=800V , VGS= -5/+18V , ID=40A RG=4.5Ω	-	18	-	nS
Rise Time	Tr		-	14	-	
Turn-Off Delay Time	Td(off)		-	29	-	
Fall Time	Tf		-	10	-	
Turn-On Energy	Eon		-	223	-	μJ
Turn-Off Energy	Eoff		-	90	-	
Total Switching Loss	Etot		-	313	-	
Reverse Diode Characteristics						
Diode Forward Voltage	VSD	VGS= -5V , ISD=20A , TJ=25℃	-	4.7	-	V
		VGS= -5V , ISD=20A , TJ=175℃	-	4.2	-	
Reverse Recovery Time	trr	VGS=-5V/+18V, ISD=70A,	-	23	-	nS
Reverse Recovery Charge	Qrr	VR=800V,	-	696	-	nC
Peak Reverse Recovery Current	Irrm	di/dt=1000A/μs	-	43	-	A

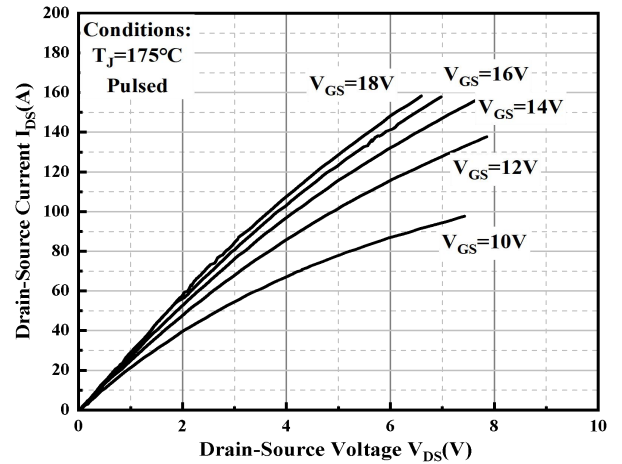
Note :

The test condition is $V_{DD}=50V, V_{GS}=10V, L=0.5mH, R_G=25\Omega$

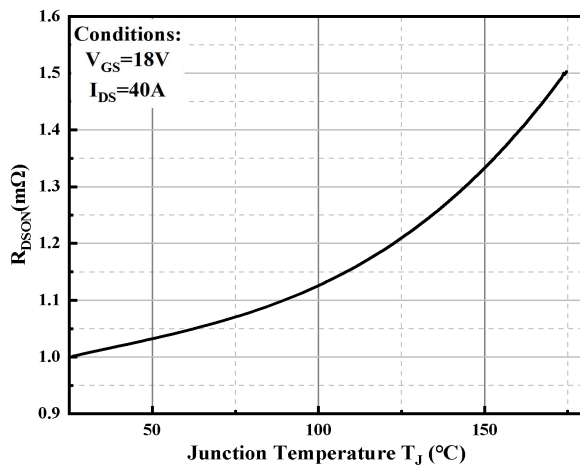
Typical Characteristics



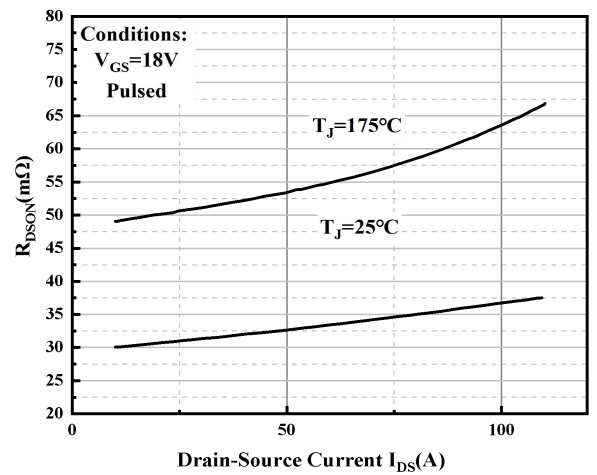
Typical output characteristic(25°C)



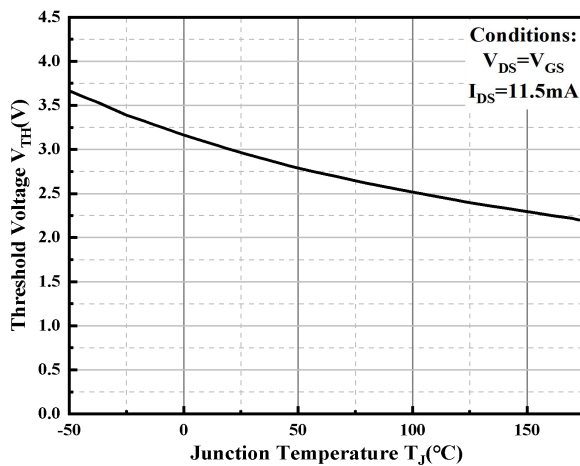
Typical output characteristic(175°C)



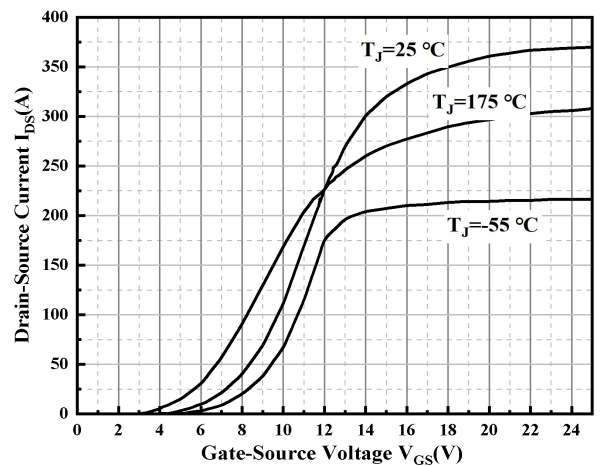
Normalized On-Resistance with Temperature



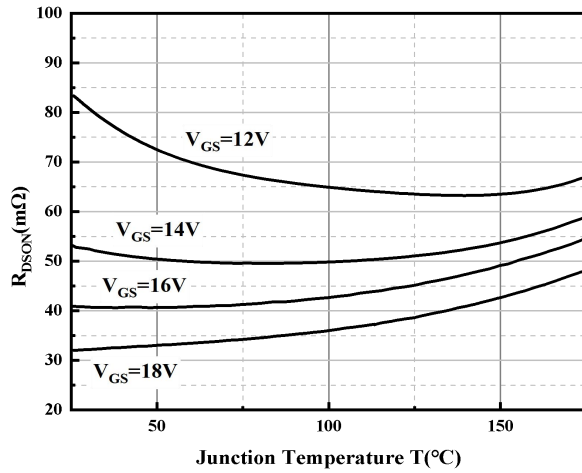
On-Resistance vs. Drain-Source Current



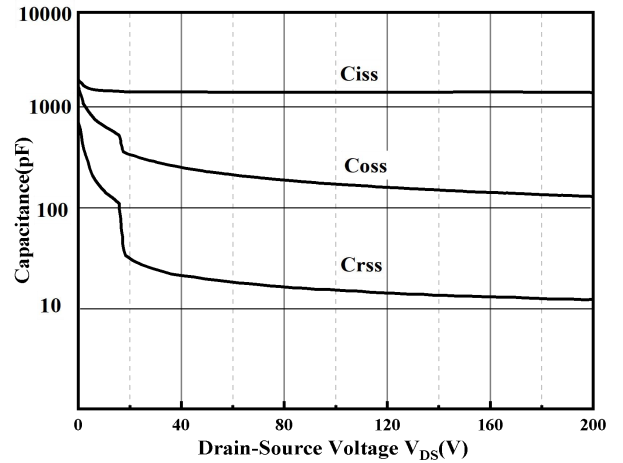
Threshold Voltage Variation with Temperature



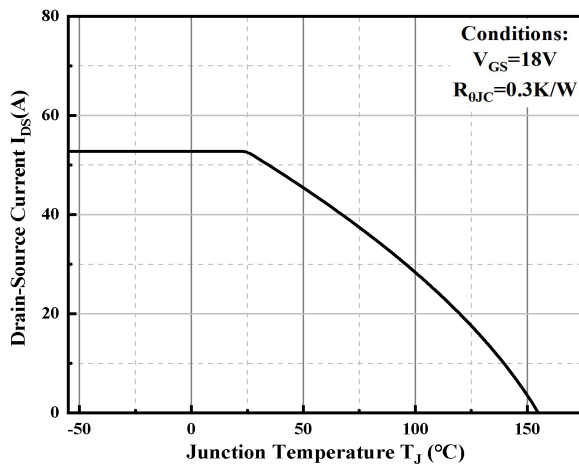
Transfer Characteristics



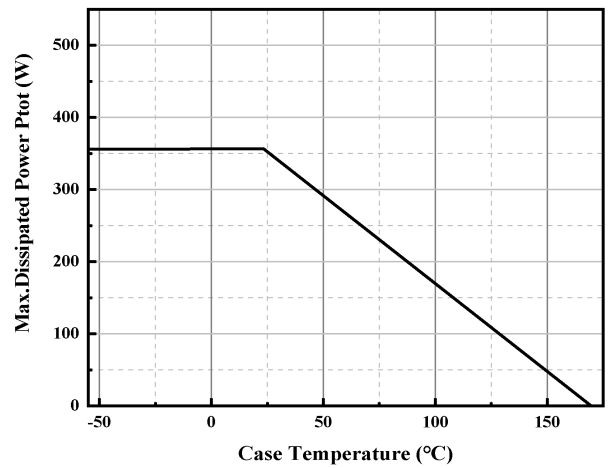
On-Resistance Variation with Temperature



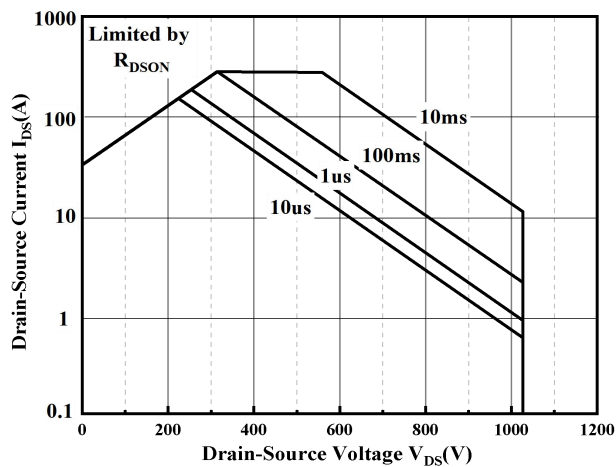
Capacitance vs. Drain-to-Source Voltage



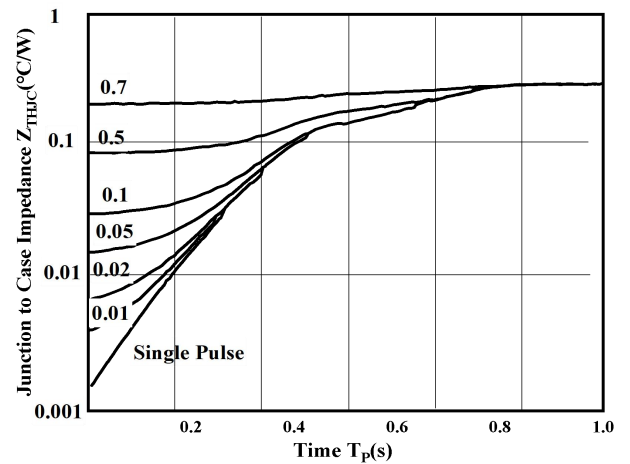
Maximum I_{DS} vs. Case Temperature



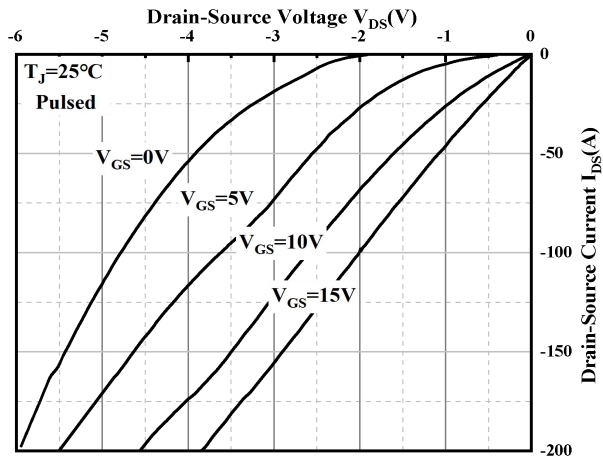
Power dissipation vs. Case temperature



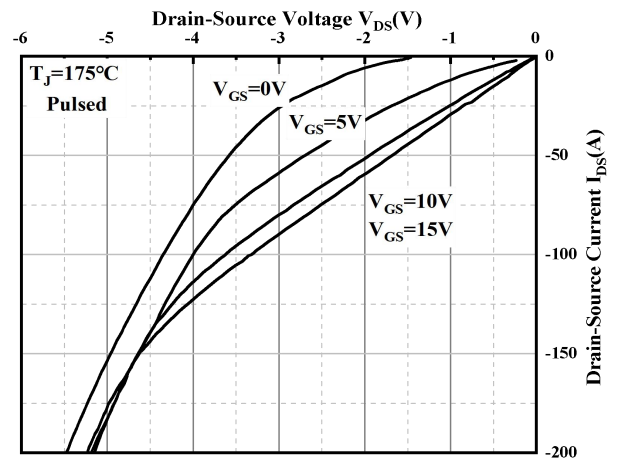
Safe Operation Area



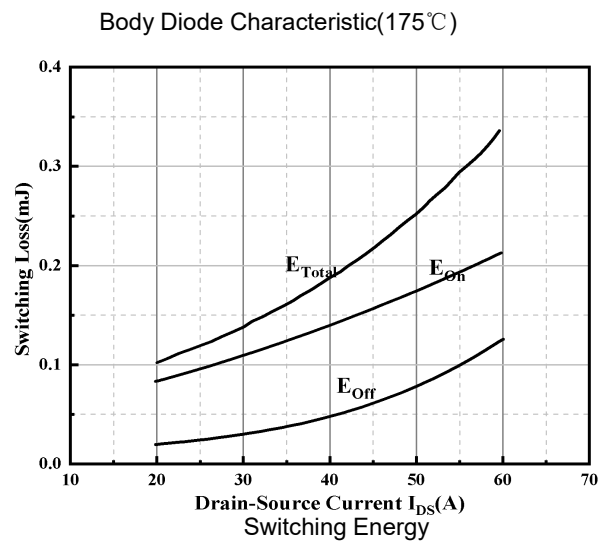
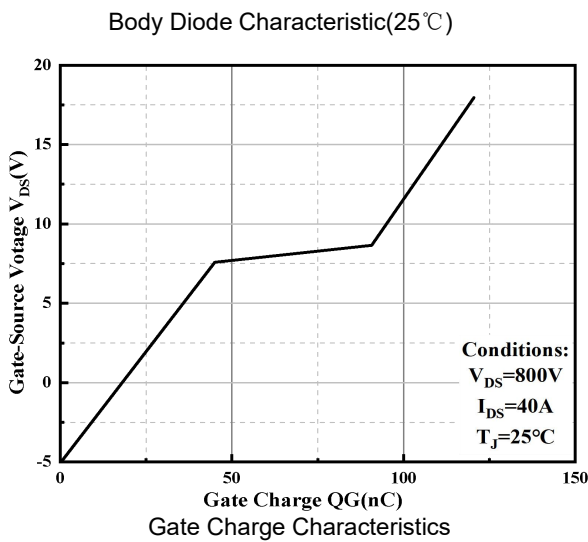
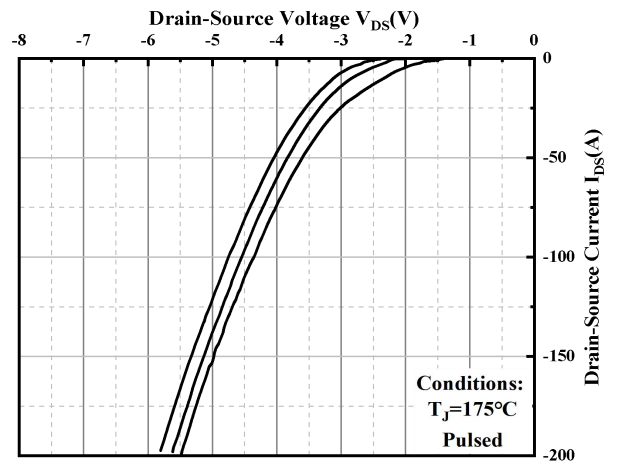
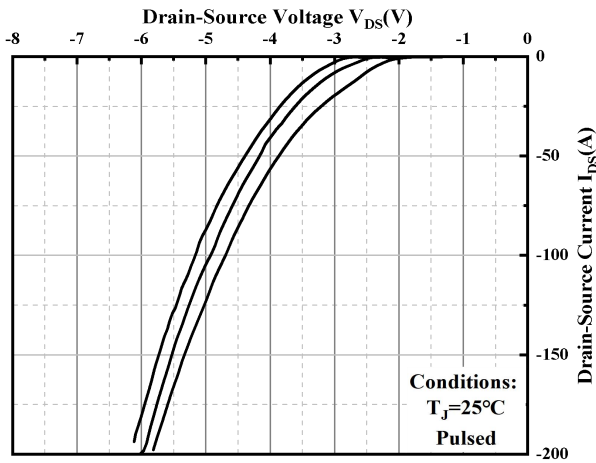
Transient Thermal Impedance

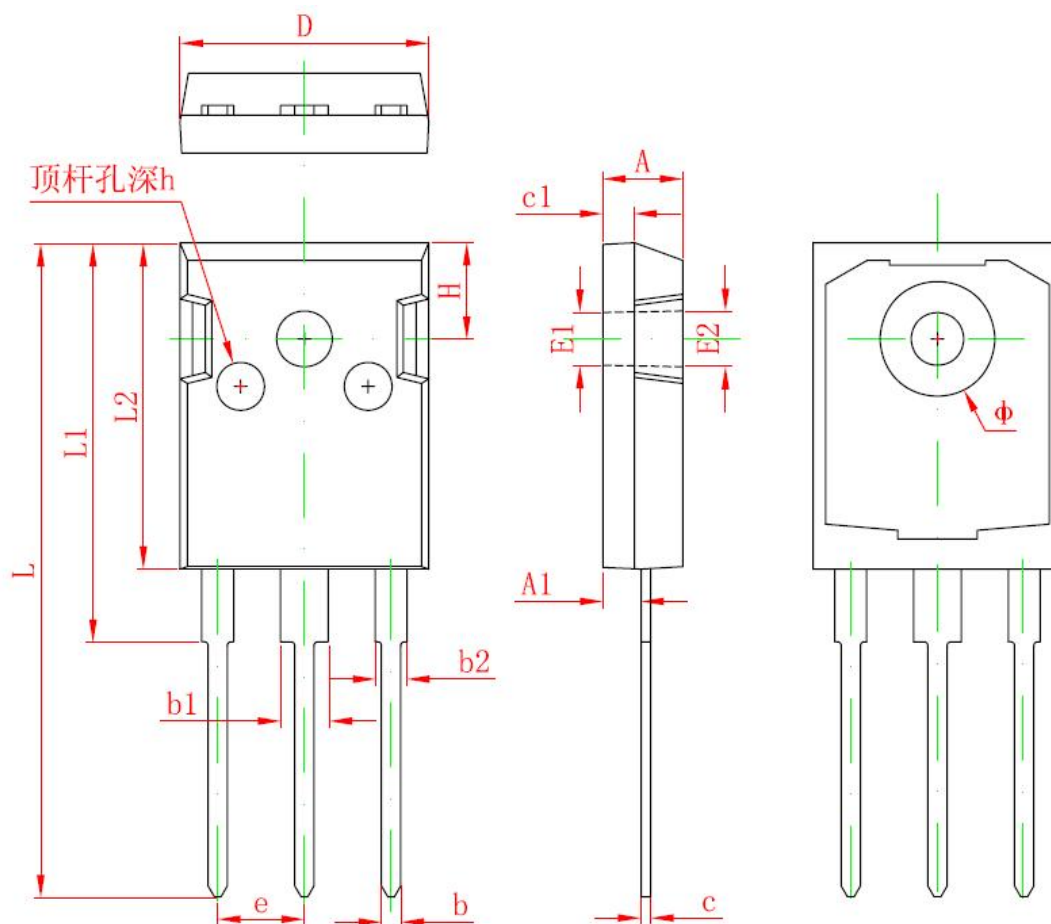


Drain-Source Current vs Drain-Source Voltage(25°C)



Drain-Source Current vs Drain-Source Voltage(175°C)



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