

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
1500V	$5.4\Omega@10V$	3A



合肥矽普半导体

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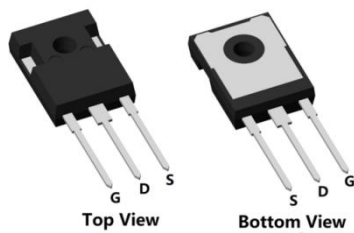
Feature

- Fast Switching
- Low Gate Charge and $R_{DS(on)}$
- 100% Single Pulse avalanche energy Test

Applications

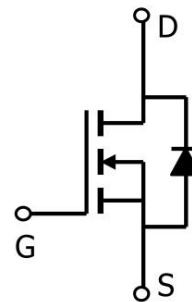
- DC-DC Converter
- Ideal for high-frequency switching and synchronous rectification

Package

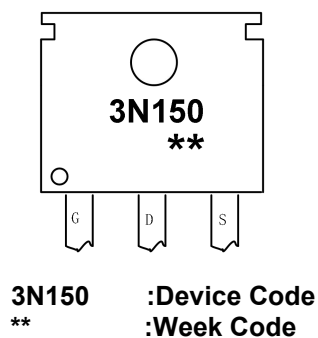


TO-247(G:1 D:2 S:3)

Circuit diagram



Marking



Order Information

Device	Package	Unit/Tube
SP3N150TF	TO-247	30

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

Parameter	Symbol	Rating	Units
Drain-Source Voltage	V_{DS}	1500	V
Gate-Source Voltage	V_{GS}	± 30	V
Continuous Drain Current (Tc=25°C)	I_D	3	A
Continuous Drain Current (Tc=100°C)	I_D	2	A
Pulsed Drain Current	I_{DM}	12	A
Single Pulse Avalanche Energy ¹	E_{AS}	180	mJ
Power Dissipation (Tc=25°C)	P_D	180	W
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	0.69	°C/W
Storage Temperature Range	T_{STG}	-55 to 150	°C
Operating Junction Temperature Range	T_J	-55 to 150	°C

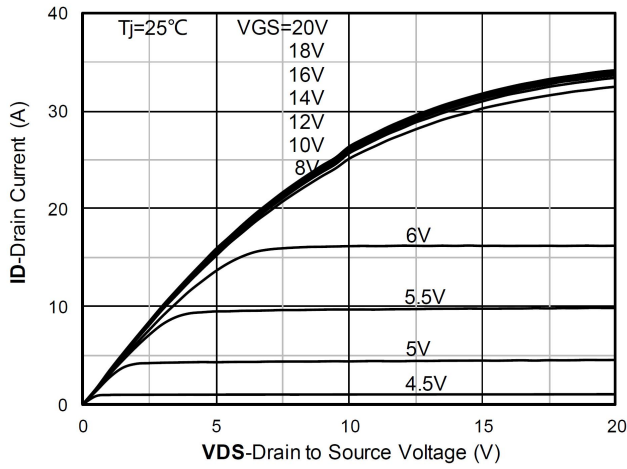
Electrical characteristics (Ta=25°C, unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	VGS=0V , ID=250uA	1500	-	-	V
Drain-Source Leakage Current	IDSS	VDS=1500V , VGS=0V , TJ=25°C	-	-	25	uA
Gate-Source Leakage Current	IGSS	VGS=±30V , VDS=0V	-	-	±100	nA
Gate Threshold Voltage	VGS(th)	VGS=VDS , ID =250uA	2.5	3.5	4.5	V
Drain-Source ON Resistance	RDS(ON)	VGS=10V , ID=1.5A	-	5.4	8.2	Ω
Dynamic characteristics						
Input Capacitance	Ciss	VDS=25V , VGS=0V , f=1MHz	-	1936	-	pF
Output Capacitance	Coss		-	96	-	
Reverse Transfer Capacitance	Crss		-	2.6	-	
Total Gate Charge	Qg	VDS=750V , VGS=10V , ID=3A	-	36.6	-	nC
Gate-Source Charge	Qgs		-	9.6	-	
Gate-Drain Charge	Qgd		-	14.6	-	
Switching Characteristics						
Turn-On Delay Time	Td(on)	VDD=750V , VGS=10V , RG=10Ω, ID=3A	-	35.6	-	nS
Rise Time	Tr		-	17.4	-	
Turn-Off Delay Time	Td(off)		-	56	-	
Fall Time	Tf		-	33.2	-	
Drain-Source Body Diode Characteristics						
Source-Drain Diode Forward Voltage	VSD	IS=1A, VGS=0V	-	-	1.2	V
Maximum Body-Diode Continuous Current	IS				3	
Body Diode Reverse Recovery Time	Trr	IS=3A , dIF/dt=100A/us	-	805	-	nS
Body Diode Reverse Recovery Charge	Qrr		-	6.7	-	nC

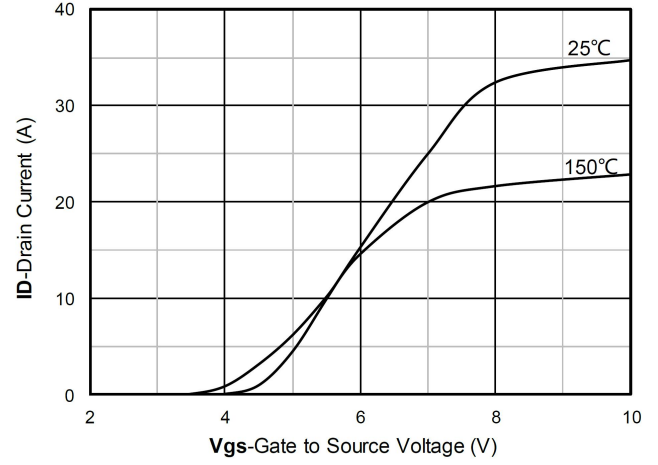
Note :

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

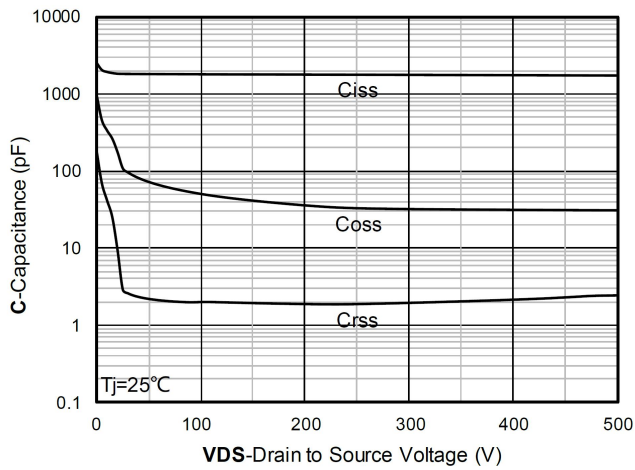
Typical Characteristics



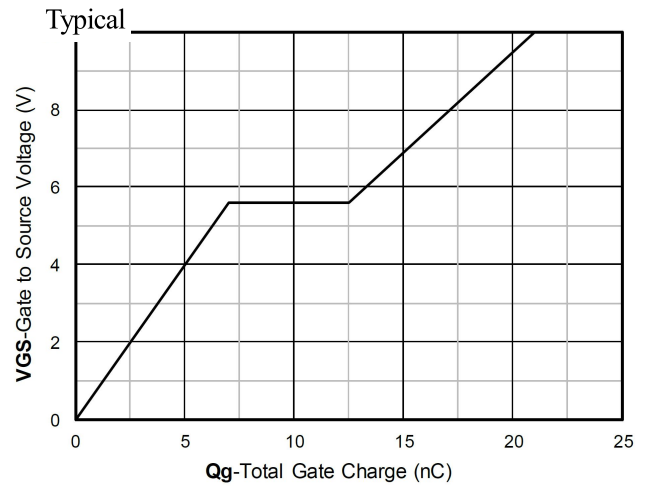
Output Characteristics



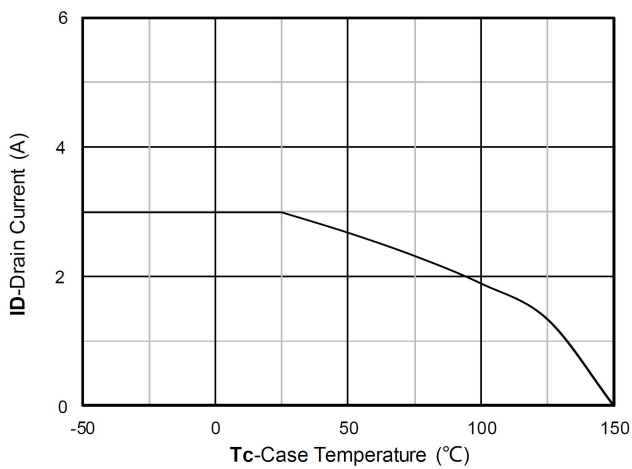
Transfer Characteristics



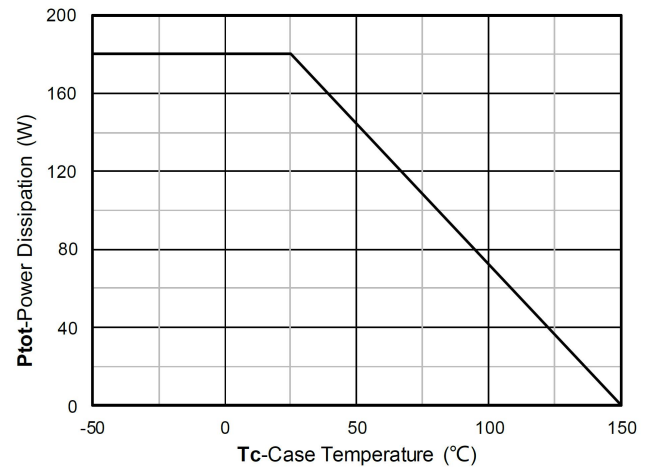
Capacitance Characteristics



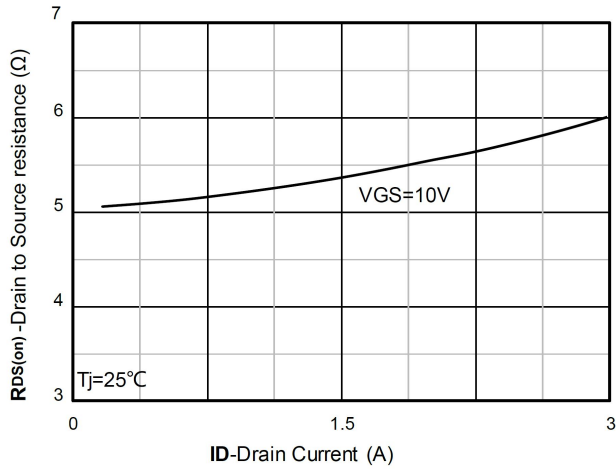
Gate Charge



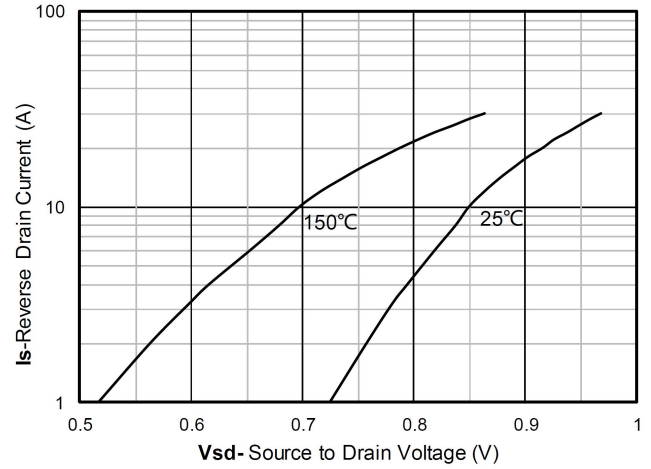
Current dissipation



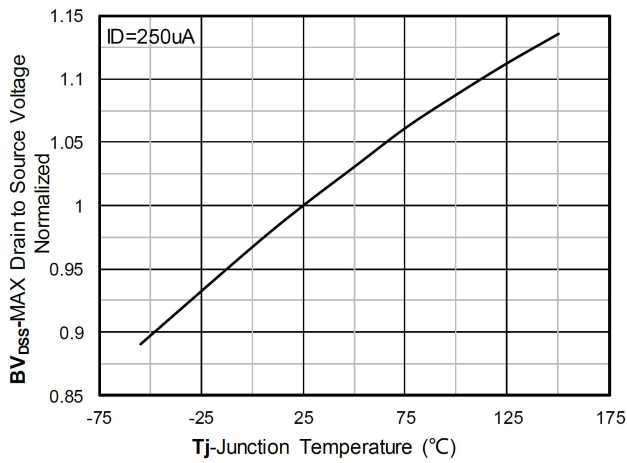
Power dissipation



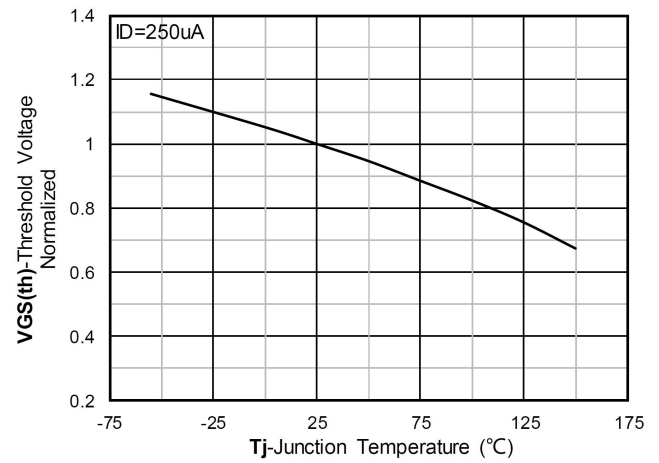
$R_{DS(on)}$ VS Drain Current



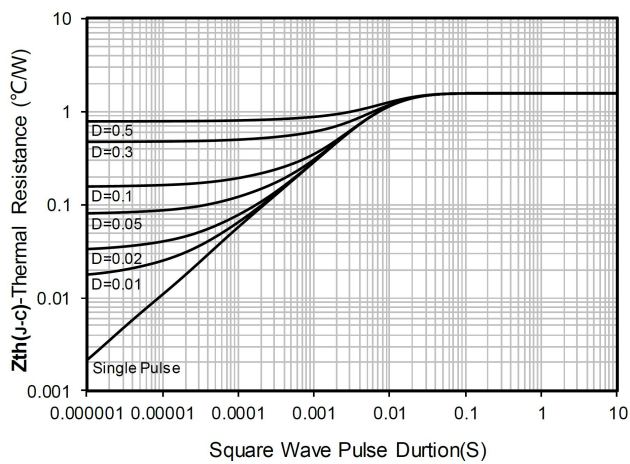
Forward characteristics of reverse diode



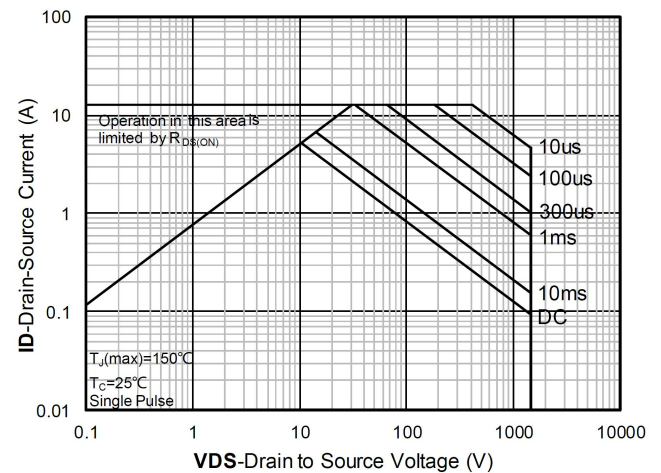
Normalized breakdown voltage



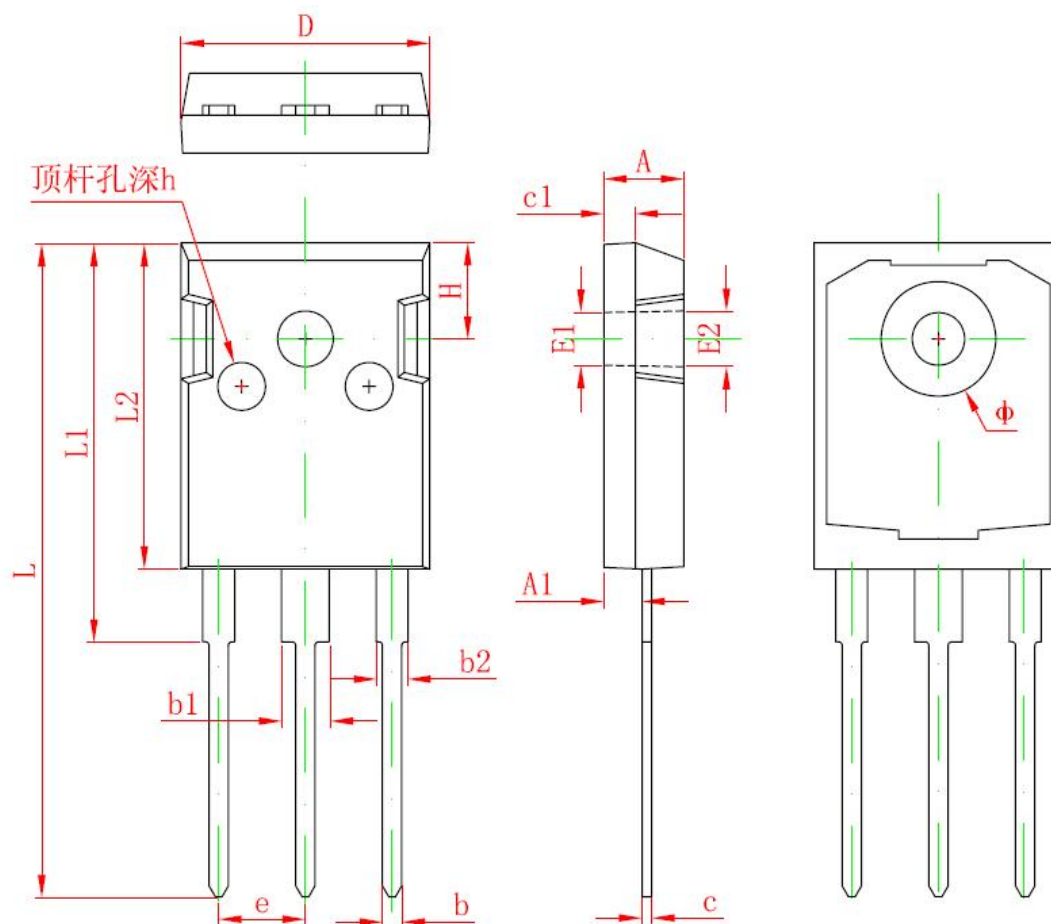
Normalized Threshold voltage



Maximum Transient Thermal Impedance



Safe Operation 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