

## Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	$I_D$
80V	2.9mΩ@10V	200A



**合肥矽普半导体**

*Siliup Semiconductor Technology Co., Ltd*

技术 品质 服务

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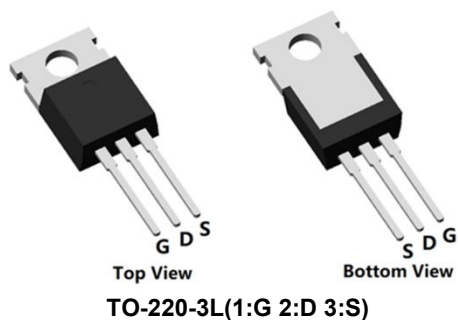
## Feature

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

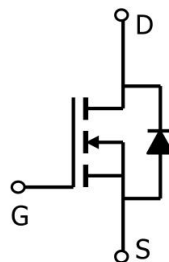
## Applications

- Power switching application
- DC-DC Converter
- Power Management

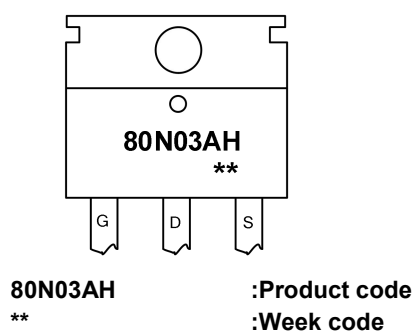
## Package



## Circuit diagram



## Marking



## Order Information

Device	Package	Unit/Tube
SP80N03AHTQ	TO-220-3L	50

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

Parameter	Symbol	Rating	Units
Drain-Source Voltage	V <sub>DS</sub>	80	V
Gate-Source Voltage	V <sub>GS</sub>	±20	V
Continuous Drain Current (Tc=25°C)	I <sub>D</sub>	200	A
Continuous Drain Current (Tc=100°C)	I <sub>D</sub>	133	A
Pulsed Drain Current	I <sub>DM</sub>	800	A
Single Pulse Avalanche Energy <sup>1</sup>	E <sub>AS</sub>	1161	mJ
Power Dissipation (Tc=25°C)	P <sub>D</sub>	300	W
Thermal Resistance Junction-to-Case	R <sub>θJC</sub>	0.42	°C/W
Storage Temperature Range	T <sub>STG</sub>	-55 to 150	°C
Operating Junction Temperature Range	T <sub>J</sub>	-55 to 150	°C

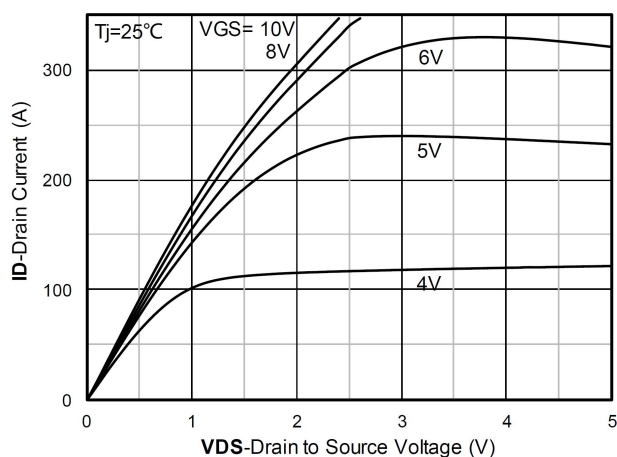
**Electrical characteristics (Ta=25°C, unless otherwise noted)**

Characteristics	Symbol	Test Condition	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	VGS=0V , ID=250uA	80	-	-	V
Drain Cut-Off Current	IDSS	VDS=64V , VGS=0V , TJ=25℃	-	-	1	μA
Gate Leakage Current	IGSS	VGS=±20V , VDS=0V	-	-	±100	nA
Gate Threshold Voltage	VGS(th)	VGS=VDS , ID =250uA	2.0	3.0	4.0	V
Static Drain-Source On-Resistance	RDS(ON)	VGS=10V , ID=75A	-	2.9	4.5	mΩ
Dynamic Characteristics						
Input Capacitance	Ciss	VDS=50V , VGS=0V , f=1MHz	-	7610	-	pF
Output Capacitance	Coss		-	722	-	
Reverse Transfer Capacitance	Crss		-	386	-	
Total Gate Charge	Qg	VDS=60V , VGS=10V , ID=75A	-	183	-	nC
Gate-Source Charge	Qgs		-	44	-	
Gate-Drain Charge	Qgd		-	65	-	
Switching Characteristics						
Turn-On Delay Time	td(on)	VDD=48V,VGS=10V, RG=6Ω, ID=75A	-	29	-	nS
Rise Time	tr		-	120	-	
Turn-Off Delay Time	td(off)		-	68	-	
Fall Time	tf		-	74	-	
Drain-Source Body Diode Characteristics						
Source-Drain Diode Forward Voltage	VSD	Is = 1A, VGS = 0V	-	-	1.2	V
Maximum Body-Diode Continuous Current	Is		-	-	200	A
Reverse Recovery Time	Trr	Is=20A, di/dt=100A/us, TJ=25℃	-	55	-	nS
Reverse Recovery Charge	Qrr		-	112	-	nC

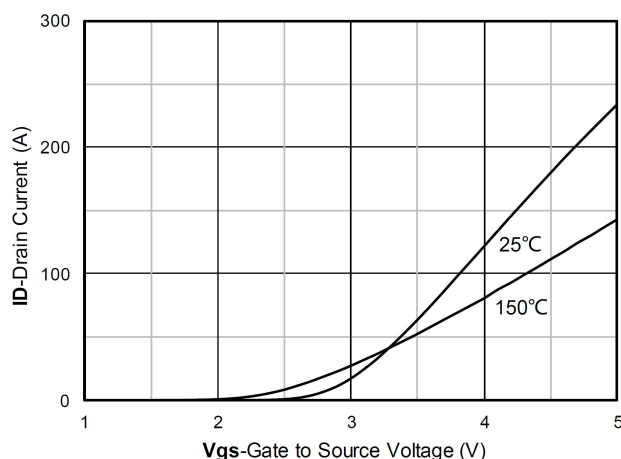
**Note :**

1. The test condition is V<sub>DD</sub>=45V, V<sub>GS</sub>=10V, L=0.3mH, R<sub>G</sub>=25Ω

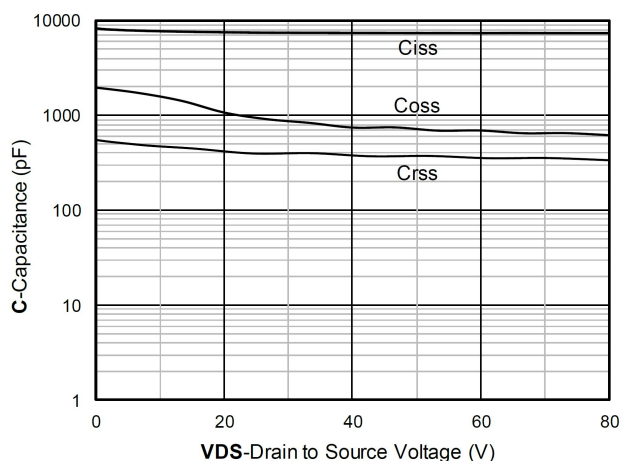
## Typical Characteristics



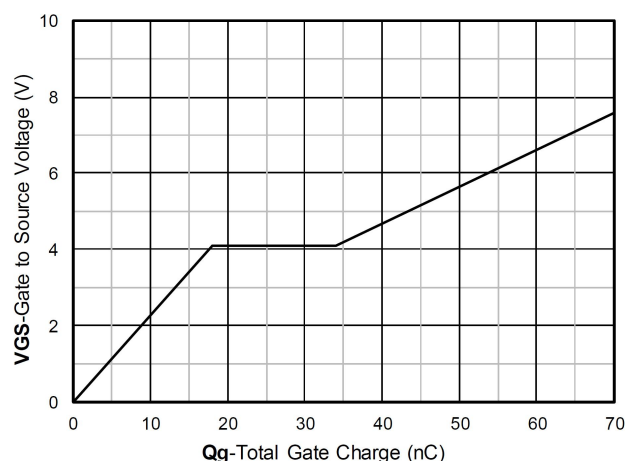
Output Characteristics



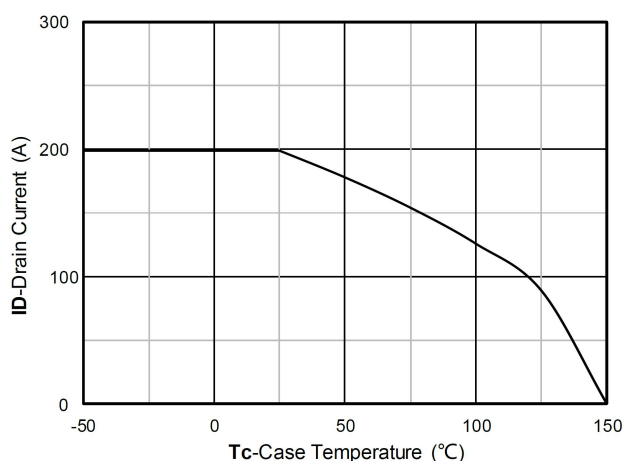
Transfer Characteristics



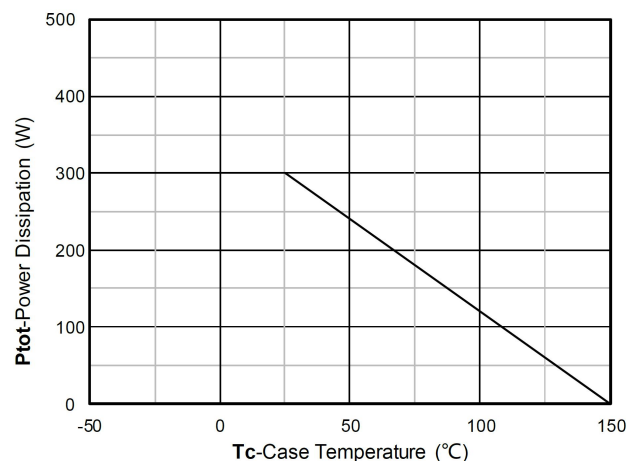
Capacitance Characteristics



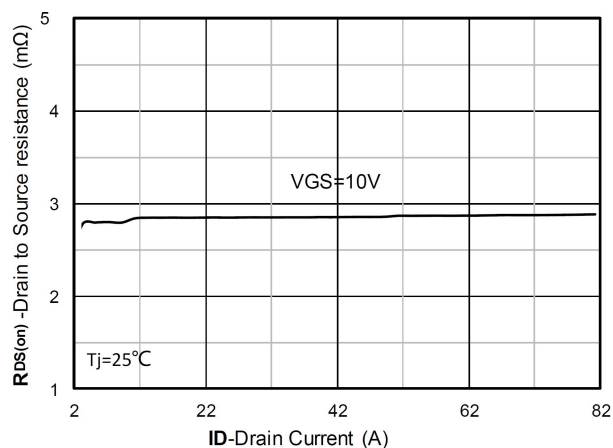
Gate Charge



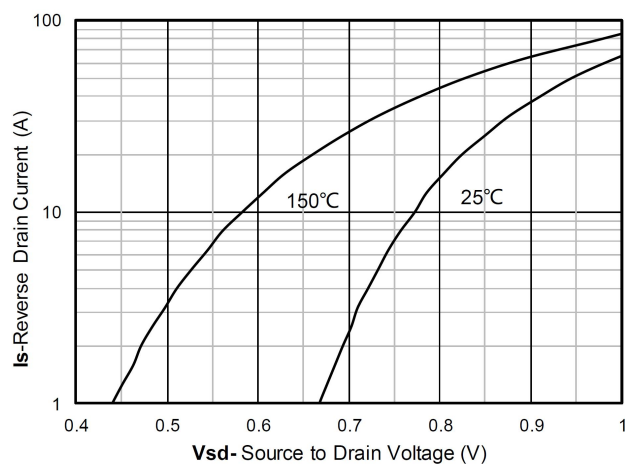
Current dissipation



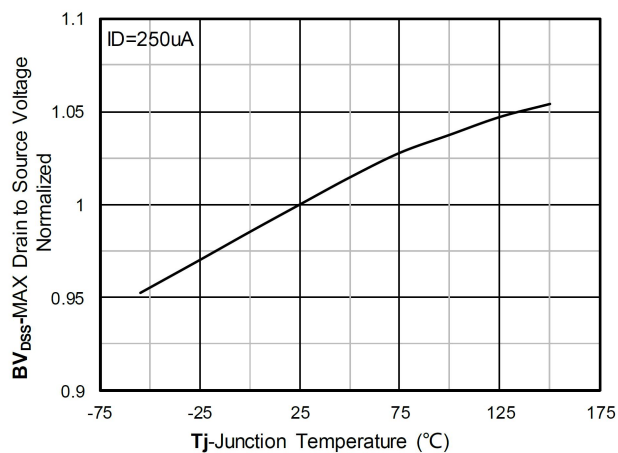
Power dissipation



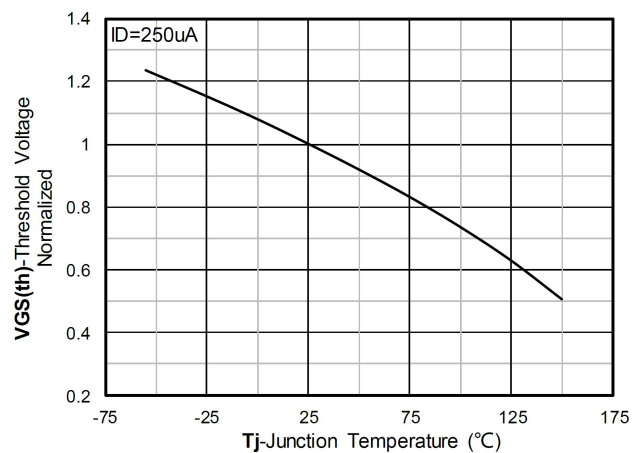
$R_{DS(on)}$  VS Drain Current



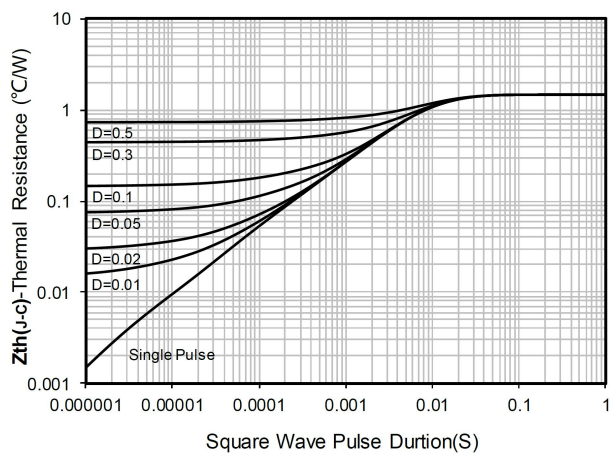
Forward characteristics of reverse diode



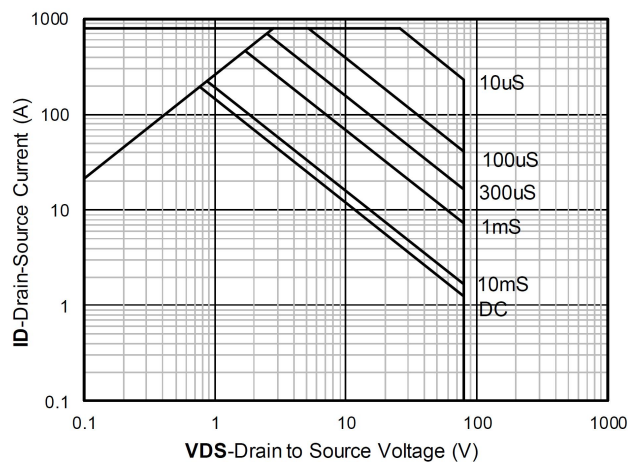
Normalized breakdown voltage



Normalized Threshold voltage



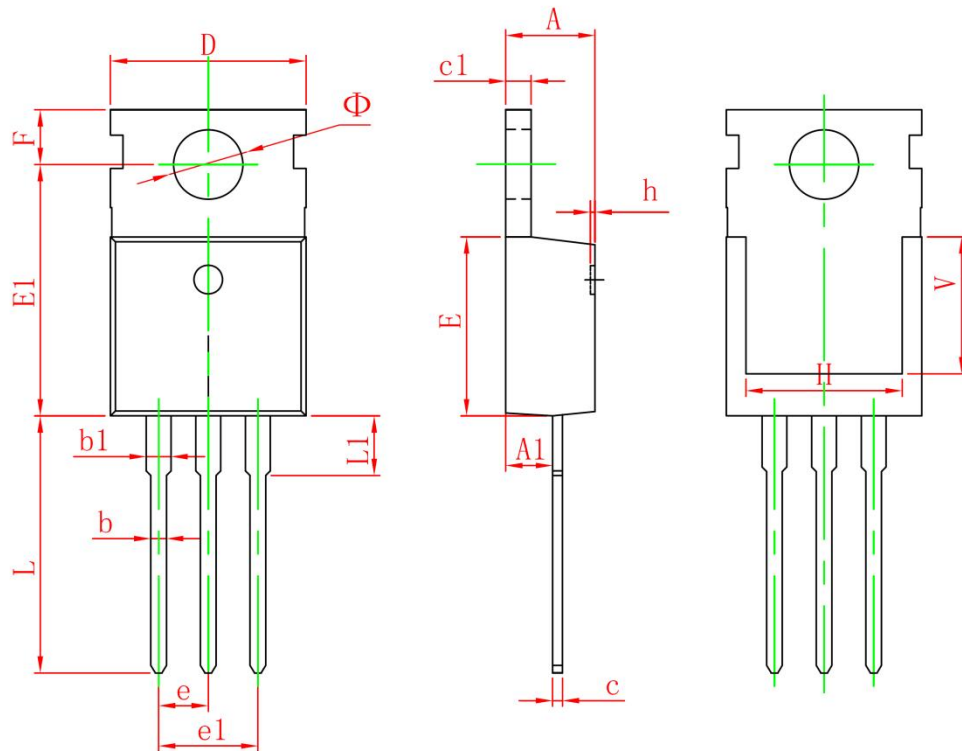
Maximum Transient Thermal Impedance



Safe Operation Area



## TO-220-3L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.400	4.600	0.173	0.181
A1	2.250	2.550	0.089	0.100
b	0.710	0.910	0.028	0.036
b1	1.170	1.370	0.046	0.054
c	0.330	0.650	0.013	0.026
c1	1.200	1.400	0.047	0.055
D	9.910	10.250	0.390	0.404
E	8.950	9.750	0.352	0.384
E1	12.650	13.050	0.498	0.514
e	2.540 TYP.		0.100 TYP.	
e1	4.980	5.180	0.196	0.204
F	2.650	2.950	0.104	0.116
H	7.900	8.100	0.311	0.319
h	0.000	0.300	0.000	0.012
L	12.900	13.400	0.508	0.528
L1	2.850	3.250	0.112	0.128
V	6.900 REF.		0.276 REF.	
Φ	3.400	3.800	0.134	0.150