

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
30V	1.65m Ω @10V	160A
	2m Ω @4.5V	



合肥矽普半导体

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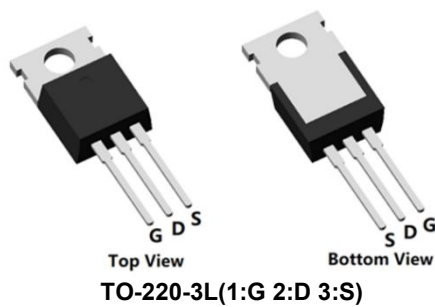
Feature

- Fast Switching
- Low Gate Charge and Rdson
- Advanced Split Gate Trench Technology
- 100% Single Pulse avalanche energy Test

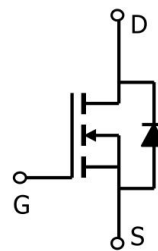
Applications

- Power switching application
- DC-DC Converters

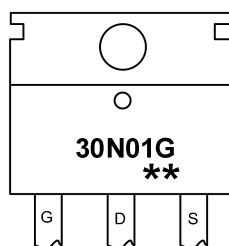
Package



Circuit diagram



Marking



30N01G :Device Code
****** :Week Code

Order Information

Device	Package	Unit/Tube
SP30N01GTQ	TO-220-3L	50

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

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current (Tc=25°C)	I_D	160	A
Continuous Drain Current (Tc=100°C)	I_D	110	A
Pulse Drain Current Tested	I_{DM}	640	A
Single Pulse Avalanche Energy ¹	E_{AS}	1444	mJ
Power Dissipation (Tc=25°C)	P_D	180	W
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	0.69	°C/W
Maximum Junction Temperature	T_J	-55 to 150	°C
Storage Temperature Range	T_{STG}	-55 to 150	°C

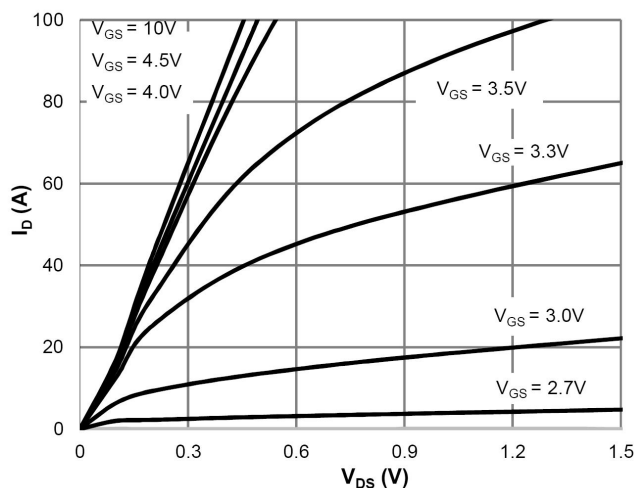
Electrical characteristics (Ta=25°C, unless otherwise noted)

Characteristics	Symbol	Test Condition	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	VGS=0V , ID=250uA	30	-	-	V
Zero Gate Voltage Drain Current	IDSS	VDS=24V , VGS=0V , TJ=25℃	-	-	1	uA
Gate Leakage Current	IGSS	VGS=±20V , VDS=0V	-	-	±100	nA
Gate Threshold Voltage	VGS(th)	VGS=VDS , ID =250uA	1	1.9	2.5	V
Drain-Source On-state Resistance	RDS(ON)	VGS=10V , ID=20A	-	1.65	2.1	mΩ
		VGS=4.5V, ID=20A	-	2	2.7	
Dynamic Characteristics						
Input Capacitance	Ciss	VDS=15V , VGS=0V , f=1MHz	-	5451	-	pF
Output Capacitance	Coss		-	1832	-	
Reverse Transfer Capacitance	Crss		-	101	-	
Total Gate Charge	Qg	VDS=15V , VGS=10V , ID=20A	-	92	-	nC
Gate-Source Charge	Qgs		-	12	-	
Gate-Drain Charge	Qgd		-	13	-	
Switching Characteristics						
Turn-On Delay Time	td(on)	VDD=15V , VGS=10V , RG=1.6Ω ID=60A	-	13	-	nS
Rise Time	tr		-	6	-	
Turn-Off Delay Time	td(off)		-	45	-	
Fall Time	tf		-	8	-	
Drain-Source Body Diode Characteristics						
Source-Drain Diode Forward Voltage	VSD	VGS=0V , IS=1A , TJ=25℃	-	-	1.2	V
Maximum Body-Diode Continuous Current	IS		-	-	160	A
Reverse Recovery Time	Trr	IS=50 A,di/dt=100 A/μs, TJ=25℃	-	35	-	nS
Reverse Recovery Charge	Qrr		-	106	-	nC

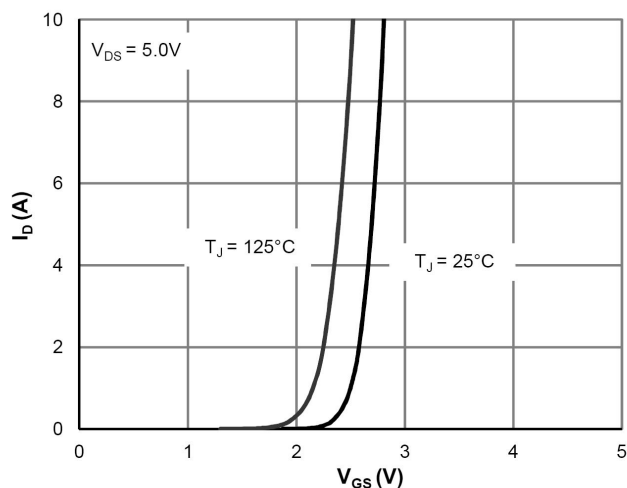
Note :

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

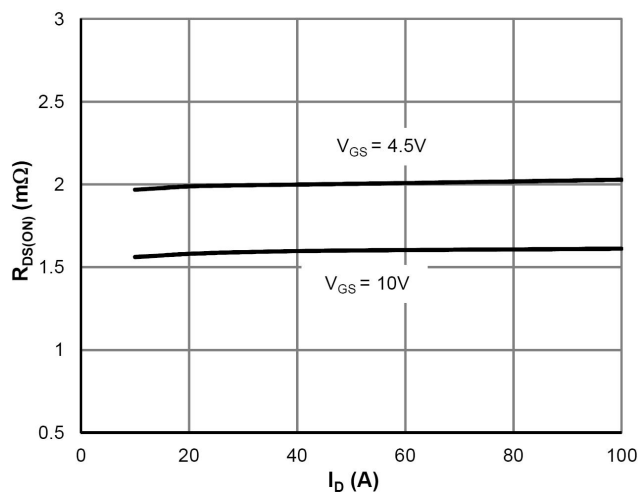
Typical Characteristics



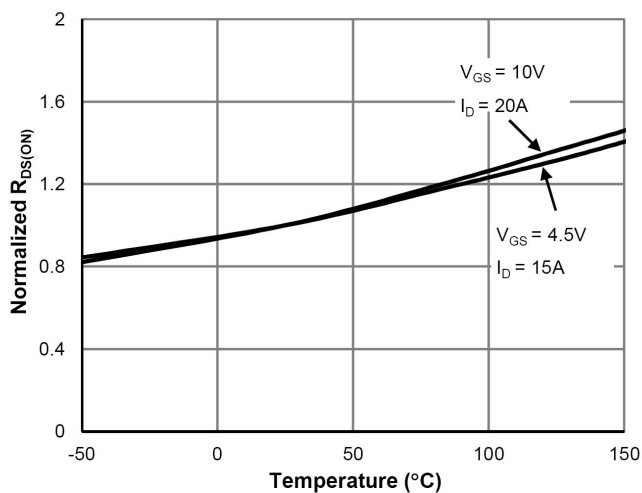
Saturation Characteristics



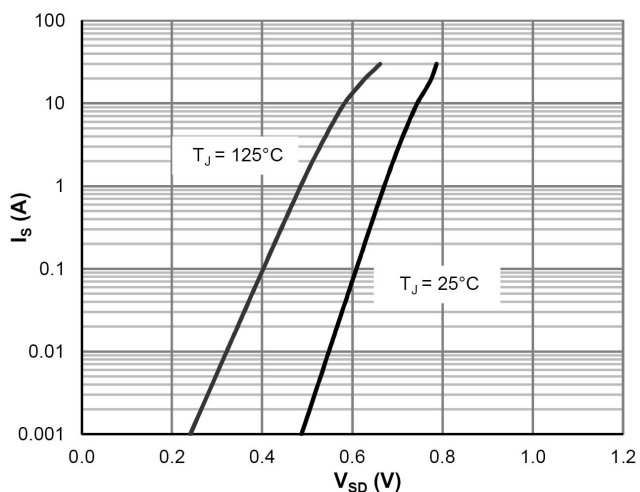
Transfer Characteristics



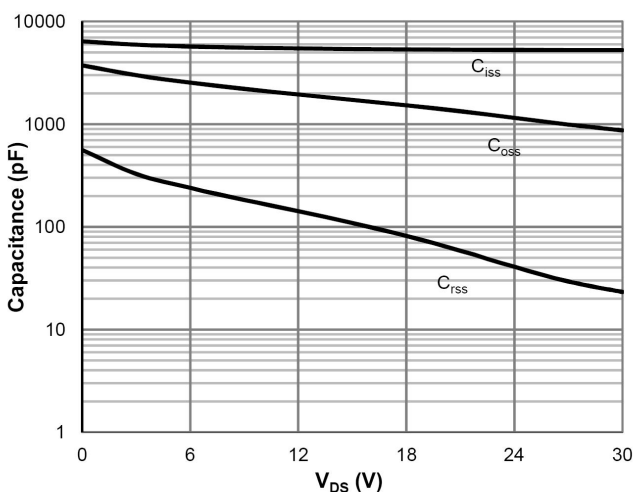
$R_{DS(ON)}$ vs. Drain Current



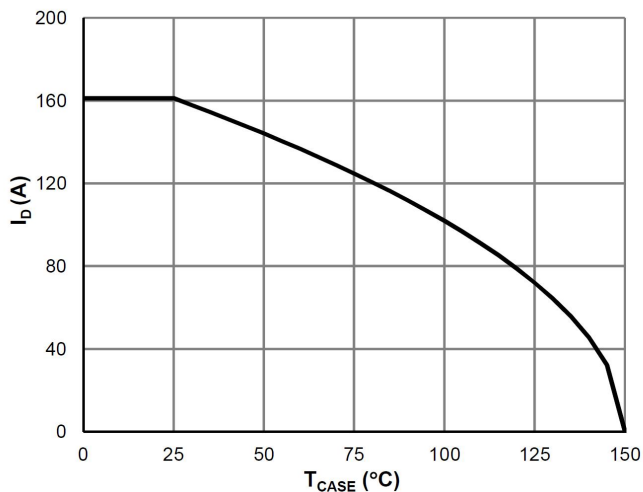
$R_{DS(ON)}$ vs. Junction Temperature



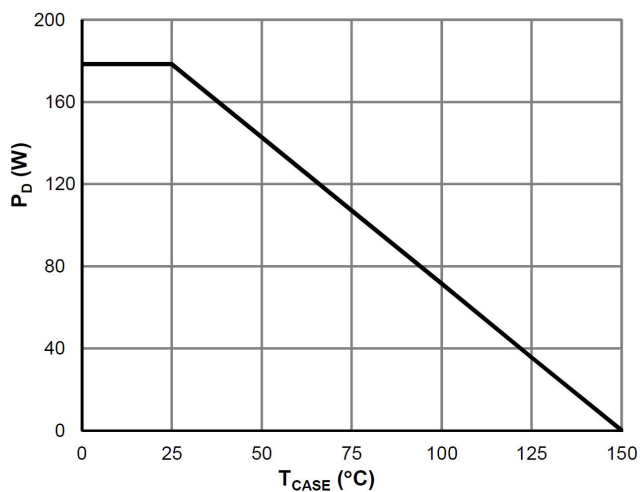
Body-Diode Characteristics



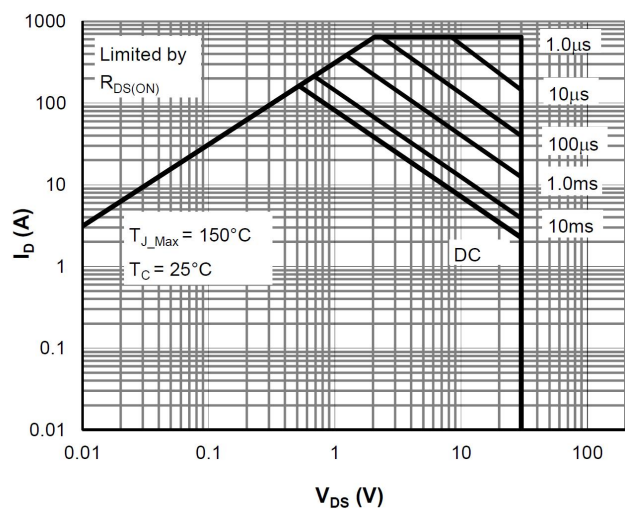
Capacitance Characteristics



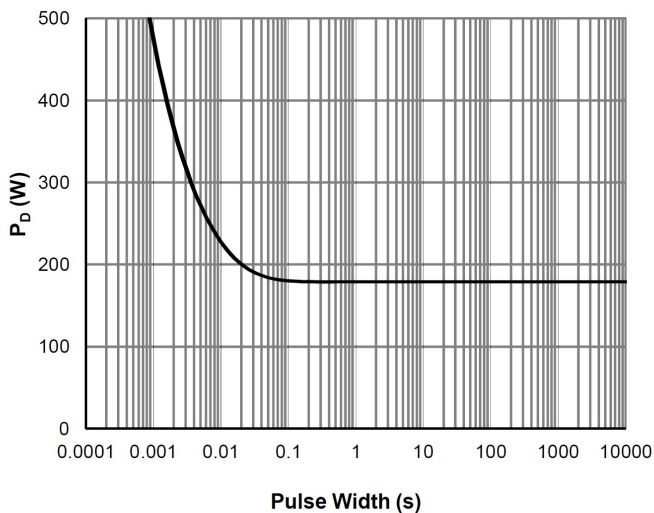
Current De-rating



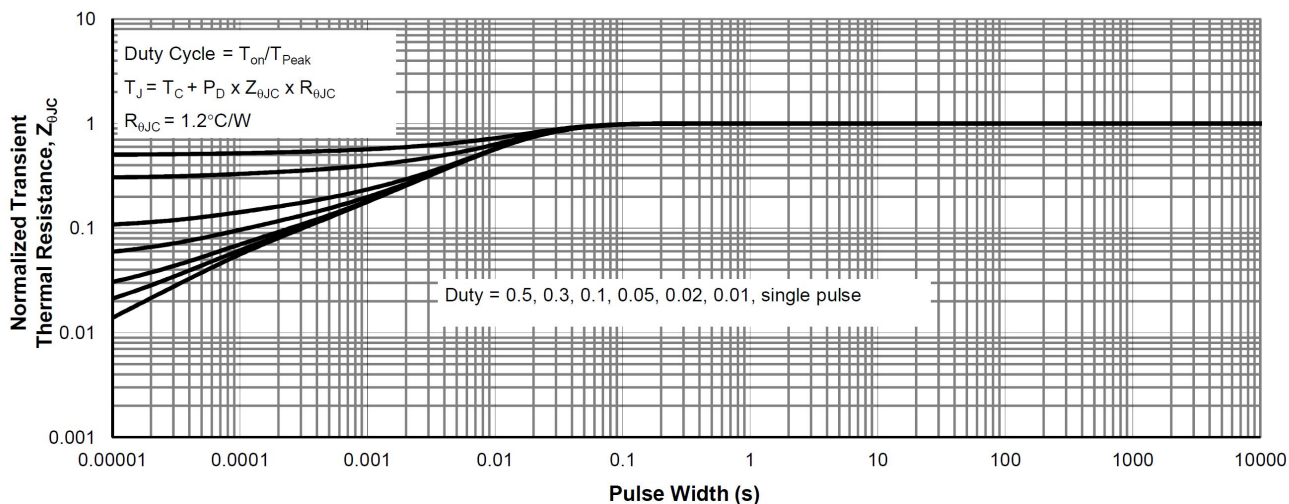
Power De-rating



Maximum Safe Operating Area

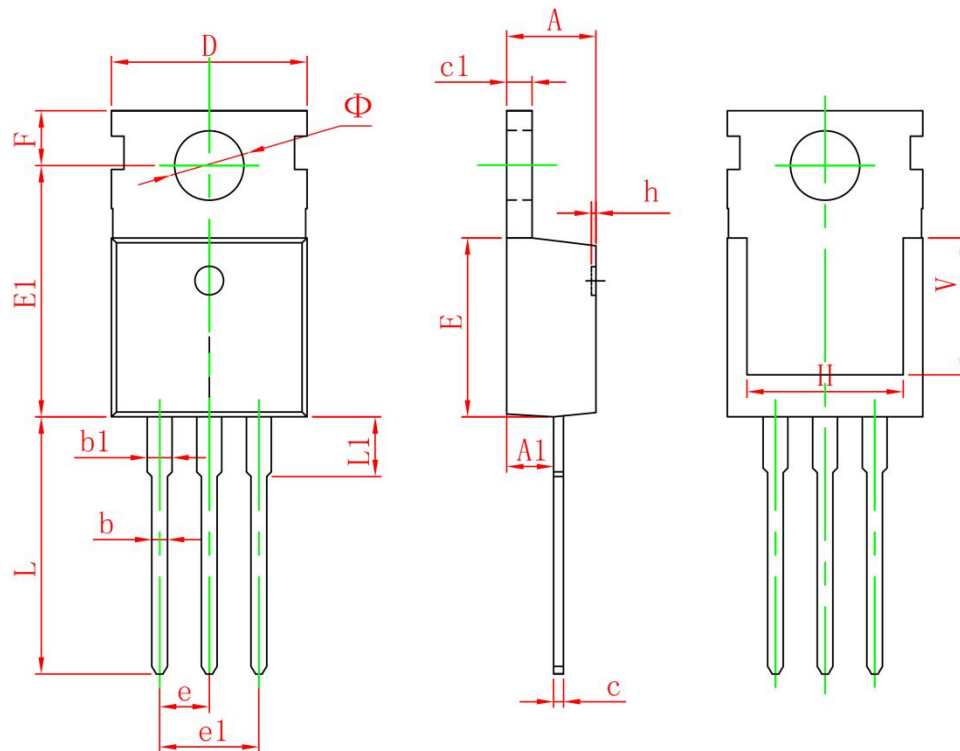


Single Pulse Power Rating, Junction-to-Case



Normalized Maximum Transient Thermal Impedance

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