Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
500V	0.3Ω@10V	18A

合肥矽普半导体
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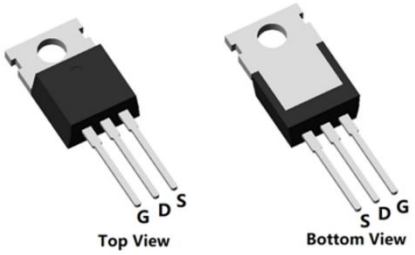
Feature

- Fast Switching
- Low Gate Charge and Rdson
- 100% Single Pulse avalanche energy Test

Applications

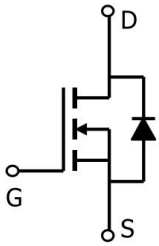
- DC-DC Converter
- Ideal for high-frequency switching and synchronous rectification

Package

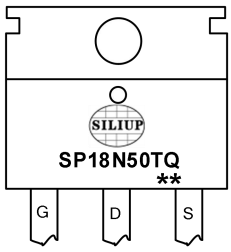


TO-220-3L(G:1 D:2 S:3)

Circuit diagram



Marking



SP18N50TQ :Device Code
** :Week Code

Order Information

Device	Package	Unit/Tube
SP18N50TQ	TO-220-3L	50

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

Parameter	Symbol	Rating	Units
Drain-Source Voltage	V_{DS}	500	V
Gate-Source Voltage	V_{GS}	±30	V
Continuous Drain Current (Tc=25℃)	I_D	18	A
Continuous Drain Current (Tc=100℃)	I_D	12	A
Pulsed Drain Current	I_{DM}	72	A
Single Pulse Avalanche Energy[1]	E_{AS}	845	mJ
Power Dissipation (Tc=25℃)	P_D	190	W
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	0.65	℃/W
Storage Temperature Range	T_{STG}	-55 to 150	℃
Operating Junction Temperature Range	T_J	-55 to 150	℃

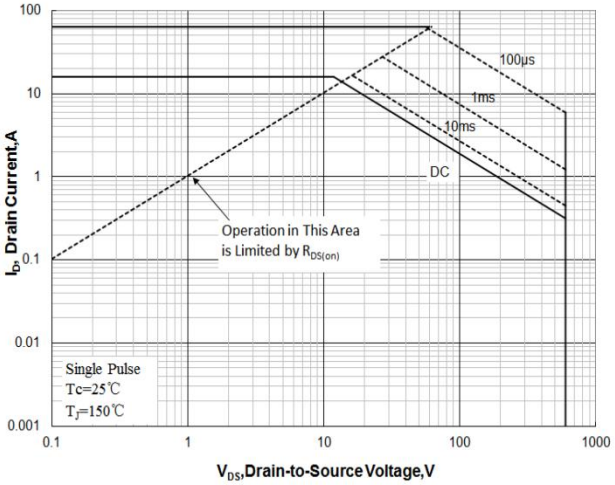
Electrical characteristics (Ta=25℃, unless otherwise noted)

Characteristics	Symbol	Test Condition	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	ID = 250μA, VGS = 0V	500	-	-	V
Drain Cut-Off Current	I_{DSS}	VDS = 400V, VGS = 0V	-	-	1	uA
Gate Leakage Current	I_{GSS}	VGS = ±20V, VDS = 0V	-	-	±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	VDS = VGS, ID = 250μA	3	4	5	V
Drain-Source ON Resistance	$R_{DS(ON)}$	VGS = 10V, ID = 9A	-	0.3	0.4	Ω
Dynamic Characteristics						
Input Capacitance	C_{iss}	VDS =50V, VGS = 0V, f = 1.0MHz	-	2620	-	pF
Output Capacitance	C_{oss}		-	220	-	
Reverse Transfer Capacitance	C_{rss}		-	6	-	
Total Gate Charge	Q_g	VDS=50V , VGS=10V , ID=50A	-	46	-	nC
Gate-Source Charge	Q_{gs}		-	12.5	-	
Gate-Drain Charge	Q_{gd}		-	15.5	-	
Switching Characteristics						
Turn-On Delay Time	$t_{d(on)}$	VGS = 10V, VDS =50V, ID=50A RG = 4.7Ω	-	28	-	nS
Rise Time	t_r		-	47	-	
Turn-Off Delay Time	$t_{d(off)}$		-	57	-	
Fall Time	t_f		-	40	-	
Drain-Source Body Diode Characteristics						
Source-Drain Diode Forward Voltage	V_{SD}	I_S=1A , VGS=0V , T_J=25℃	-	-	1.2	V
Maximum Body-Diode Continuous Current	I_S		-	-	18	A
Reverse Recovery Time	Trr	I_S=16A, di/dt=100A/us, T_J=25℃	-	445	-	nS
Reverse Recovery Charge	Qrr		-	4661	-	nC

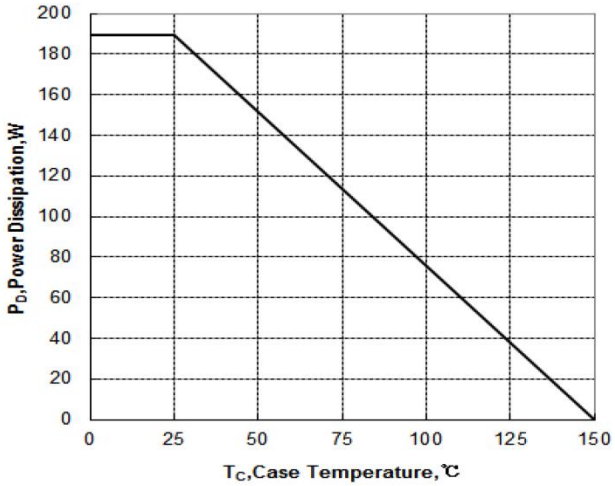
Note：

1. The EAS test condition is VDD=50V,VGS=10V,L=10mH,RG=25Ω

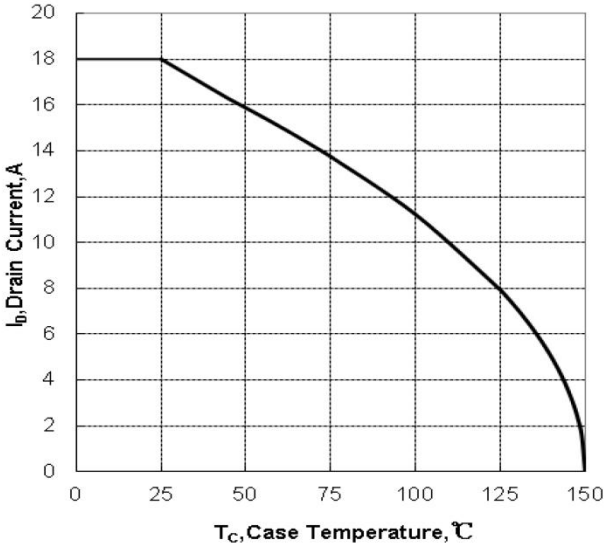
Typical Characteristics



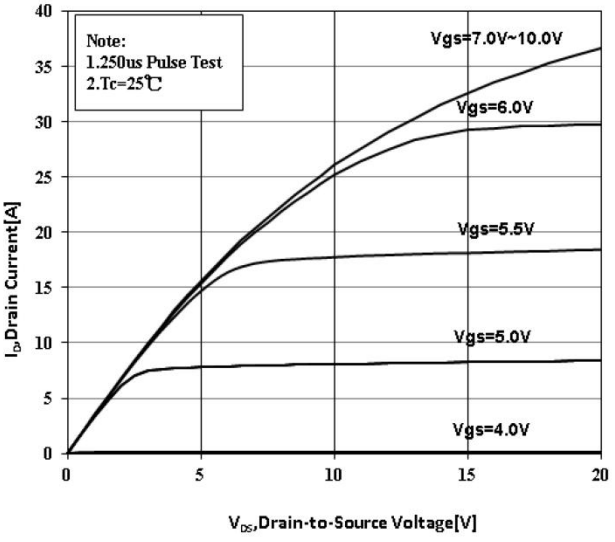
Maximum Forward Bias Safe Operating Area



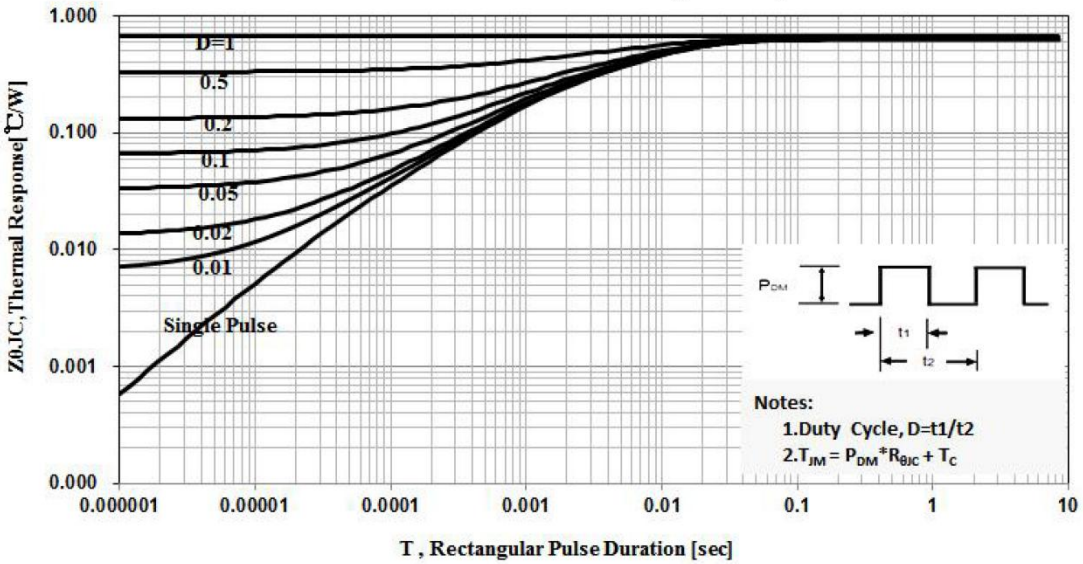
Maximum Power dissipation vs Case Temperature



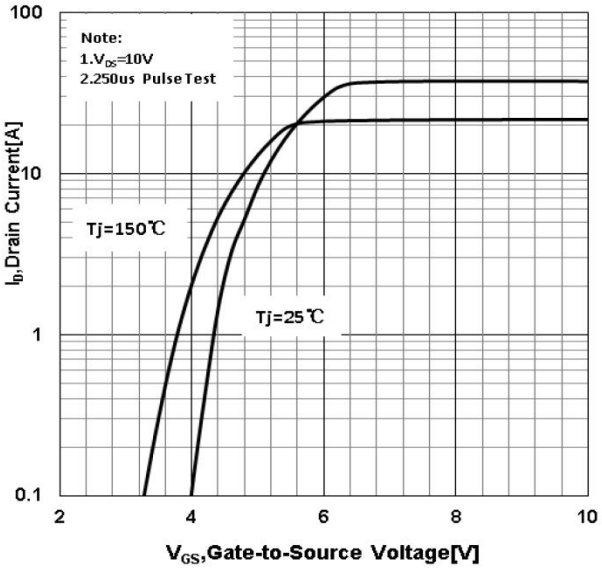
Maximum Continuous Drain Current vs Case Temperature



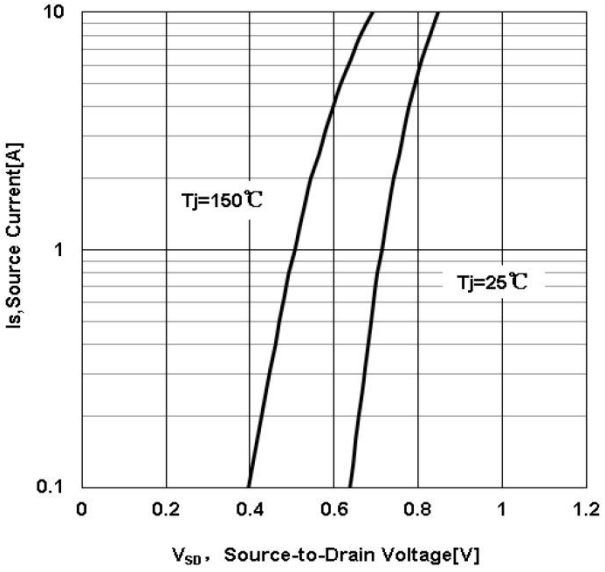
Typical Output Characteristics



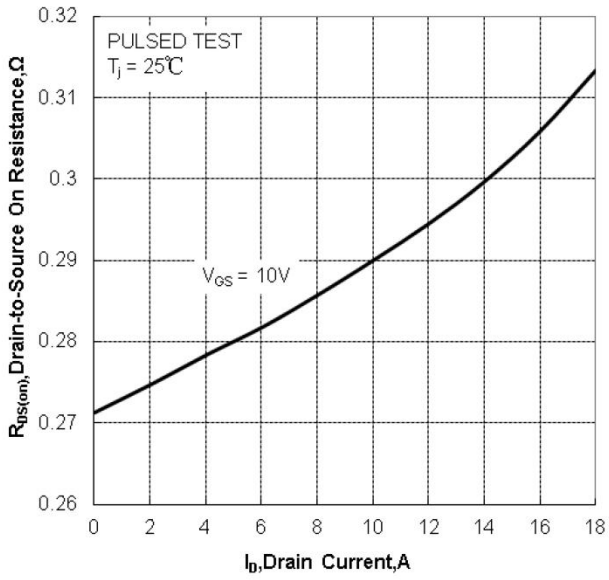
Maximum Effective Thermal Impedance , Junction to Case



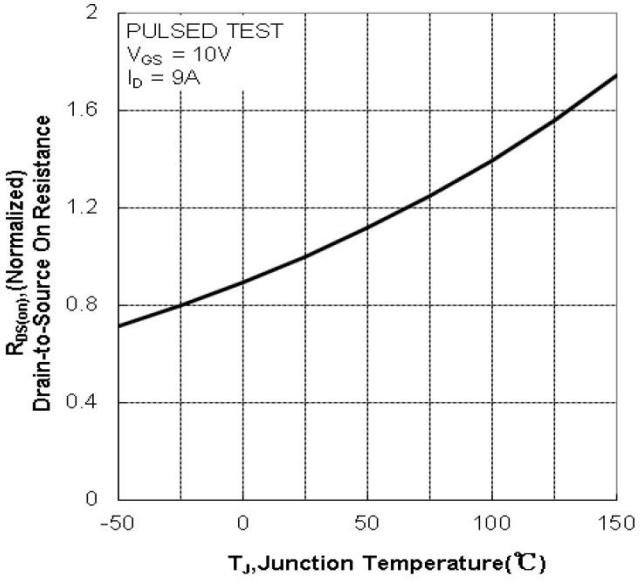
Typical Transfer Characteristics



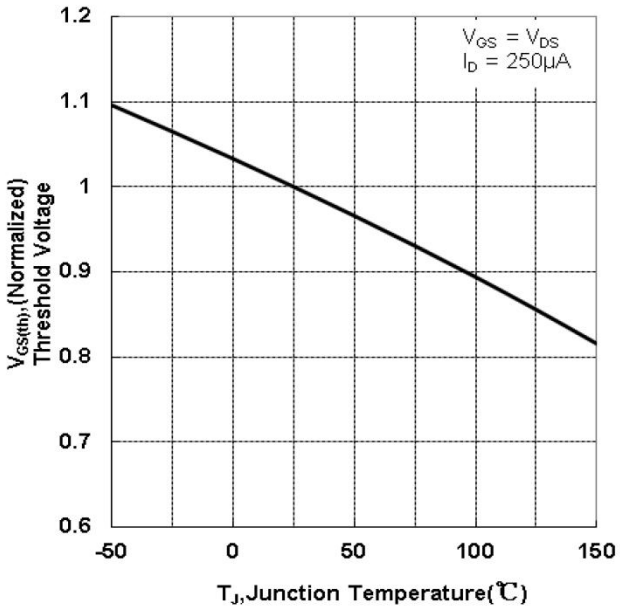
Typical Body Diode Transfer Characteristics



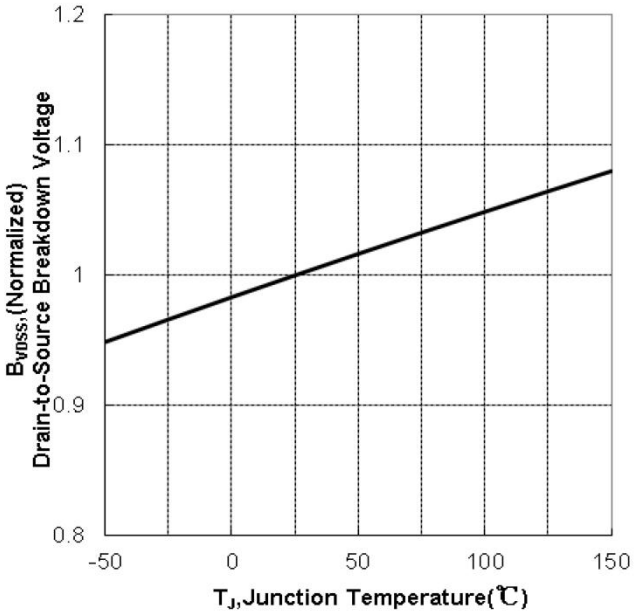
Typical Drain to Source ON Resistance
vs Drain Current



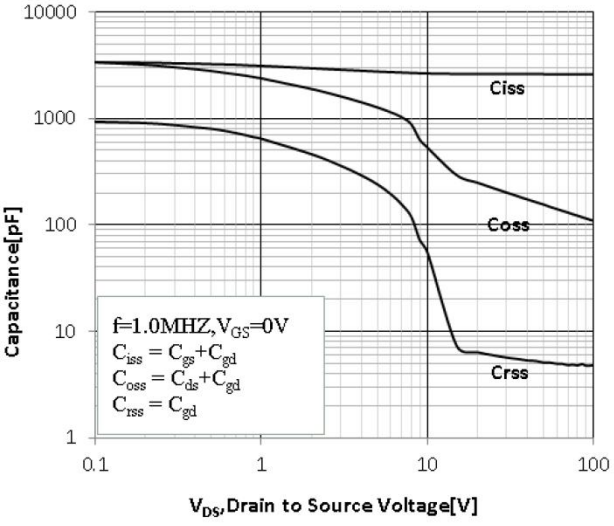
Typical Drian to Source on Resistance
vs Junction Temperature



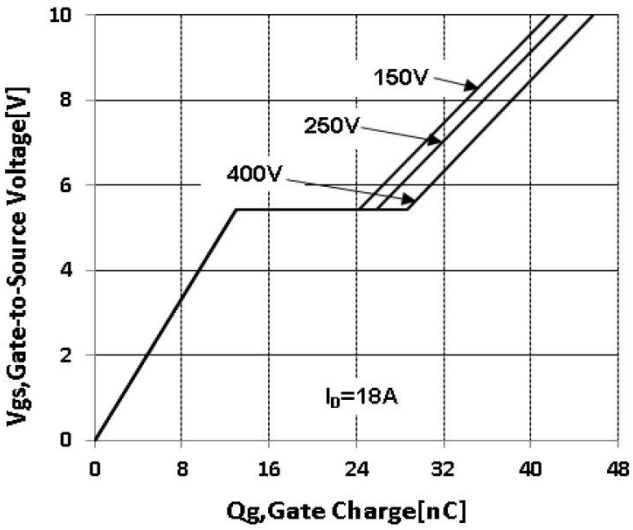
Typical Theshold Voltage vs Junction Temperature



Typical Breakdown Voltage vs Junction Temperature

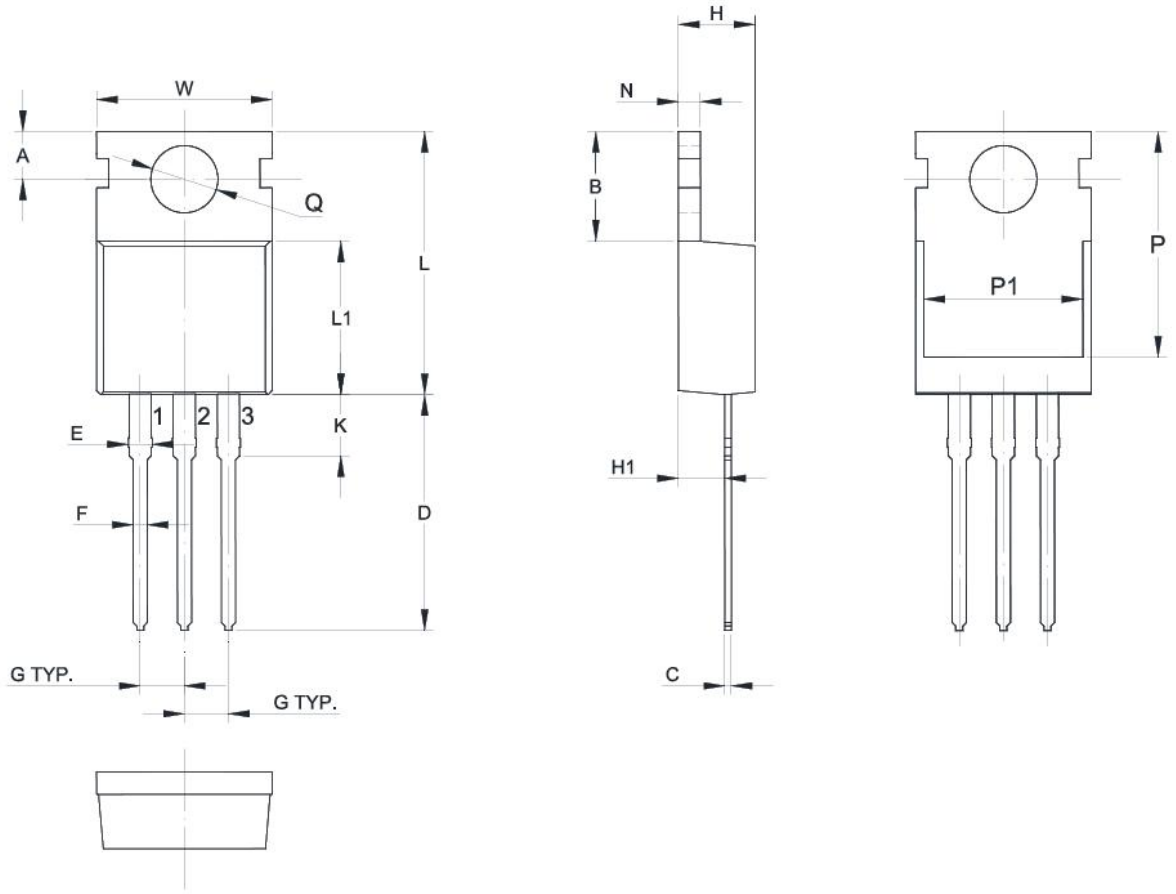


Typical Capacitance vs Drain to Source Voltage



Typical Gate Charge vs Gate to Source Voltage

TO-220-3L Package Information



Symbol	Dimensions In Millimeters	
	Min.	Max.
A	2.700	2.900
B	6.400	6.800
C	0.300	0.700
D	11	15
E	1.1	1.5
F	0.7	0.9
G	2.54TYP	
W	9.8	10.2
H	4.3	4.7
H1	2.2	2.5
K	2.7	3.1
L	14.8	16.8
L1	9.0	9.4
N	1.2	1.4
P	12.7	13.3
P1	7.6	8.2
Q	3.5	3.7