

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
900V	$2\Omega@10V$	6A



合肥矽普半导体

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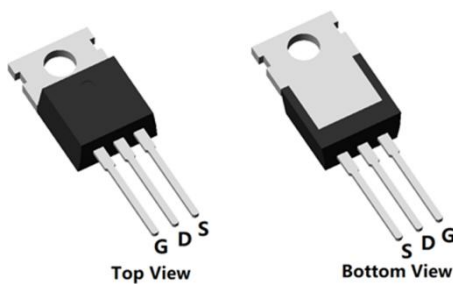
Feature

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

Applications

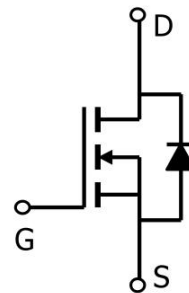
- DC-DC Converter
- Ideal for high-frequency switching and synchronous rectification

Package

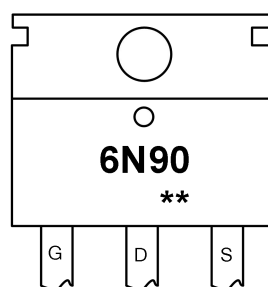


TO-220-3L(1:G 2:D 3:S)

Circuit diagram



Marking



6N90
**

:Device Code
:Week Code

Order Information

Device	Package	Unit/Tube
SP6N90TQ	TO-220-3L	50

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

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	900	V
Gate-Source Voltage	V_{GS}	± 30	V
Continuous Drain Current (Tc=25°C)	I_D	6	A
Continuous Drain Current (Tc=100°C)	I_D	4	A
Pulsed Drain Current	I_{DM}	24	A
Single Pulse Avalanche Energy ¹	E_{AS}	405	mJ
Power Dissipation (Tc=25°C)	P_D	167	W
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	0.75	°C/W
Storage Temperature Range	T_{STG}	-55 to 150	°C
Operating Junction Temperature Range	T_J	-55 to 150	°C

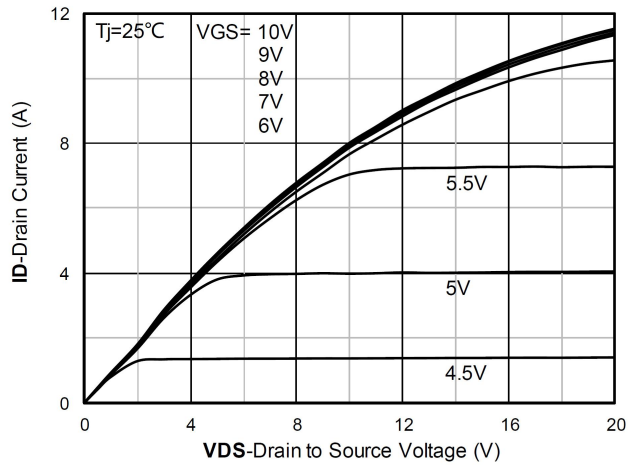
Electrical characteristics (Ta=25°C, unless otherwise noted)

Characteristics	Symbol	Test Condition	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	ID = 250μA, VGS = 0V	900	-	-	V
Drain Cut-Off Current	IDSS	VDS = 720V, VGS = 0V	-	-	1	μA
Gate Leakage Current	IGSS	VGS = ±30V, VDS = 0V	-	-	±100	nA
Gate Threshold Voltage	VGS(th)	VDS = VGS, ID = 250μA	3.0	4.0	5.0	V
Drain-Source ON Resistance	RDS(ON)	VGS = 10V, ID = 3A	-	2	2.4	Ω
Dynamic Characteristics						
Input Capacitance	Ciss	VDS =25V, VGS = 0V, f = 1.0MHz	-	1350	-	pF
Output Capacitance	Coss		-	115	-	
Reverse Transfer Capacitance	Crss		-	11	-	
Total Gate Charge	Qg	VDS=720V , VGS=10V , ID=6A	-	30	-	nC
Gate-Source Charge	Qgs		-	9	-	
Gate-Drain Charge	Qgd		-	12	-	
Switching Characteristics						
Turn-On Delay Time	td(on)	VDD=450V , VGS=10V , RG=2.5Ω, ID=6A	-	36	-	nS
Rise Time	tr		-	90	-	
Turn-Off Delay Time	td(off)		-	54	-	
Fall Time	tf		-	61	-	
Drain-Source Body Diode Characteristics						
Source-Drain Diode Forward Voltage	VSD	Is = 1A, VGS = 0V	-	-	1.2	V
Maximum Body-Diode Continuous Current	Is		-	-	6	A
Body Diode Reverse Recovery Time	Trr	Is = 6A, dIf/dt = 100A/us	-	635	-	nS
Body Diode Reverse Recovery Charge	Qrr		-	7	-	uC

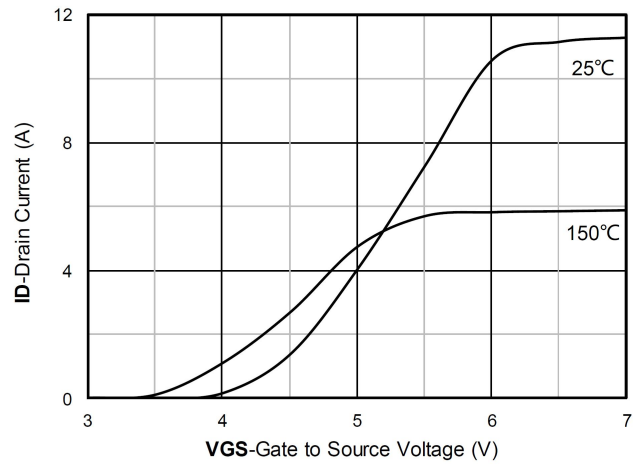
Note :

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

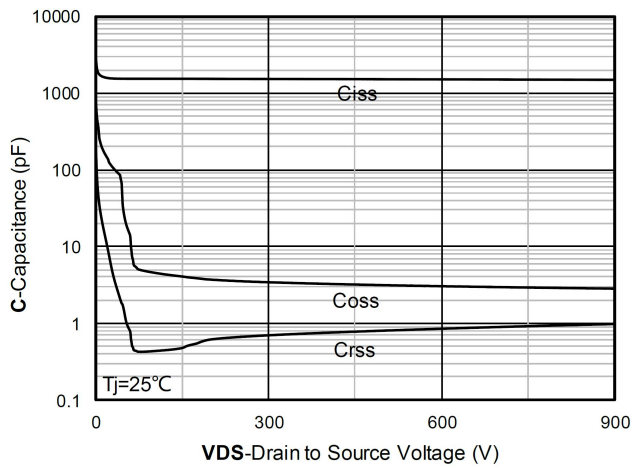
Typical Characteristics



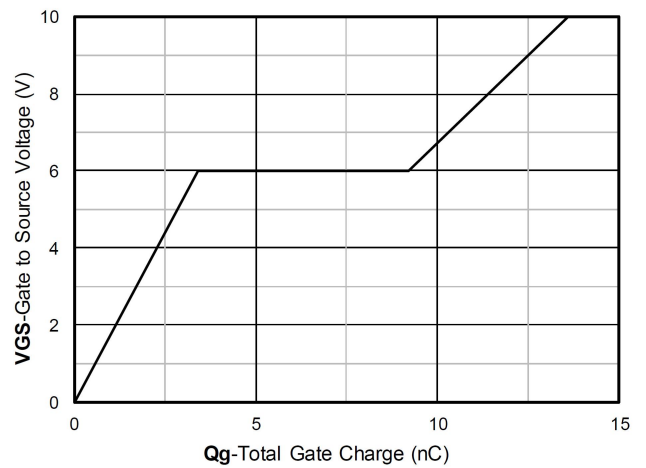
Output Characteristics



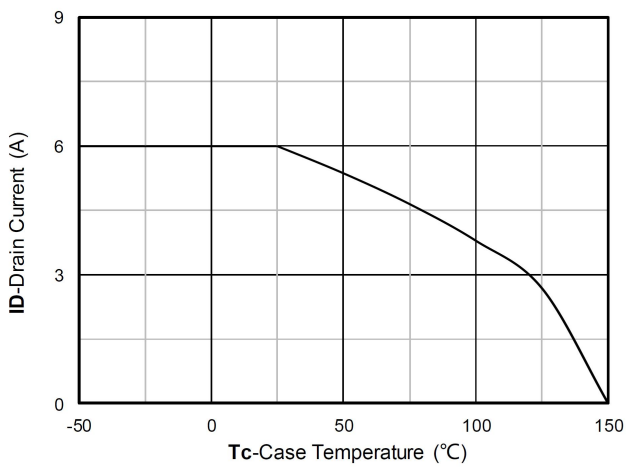
Transfer Characteristics



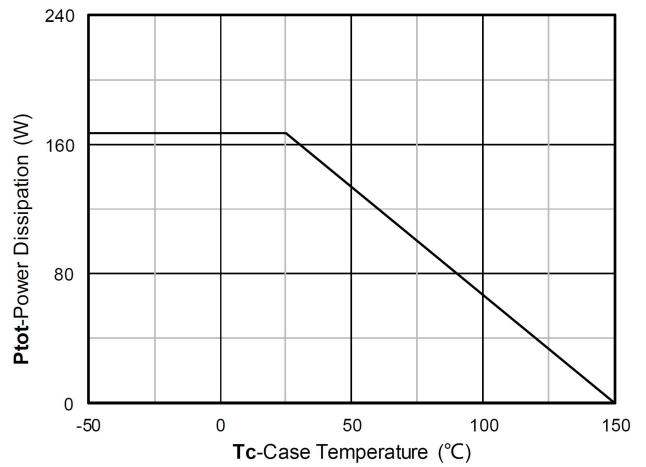
Capacitance Characteristics



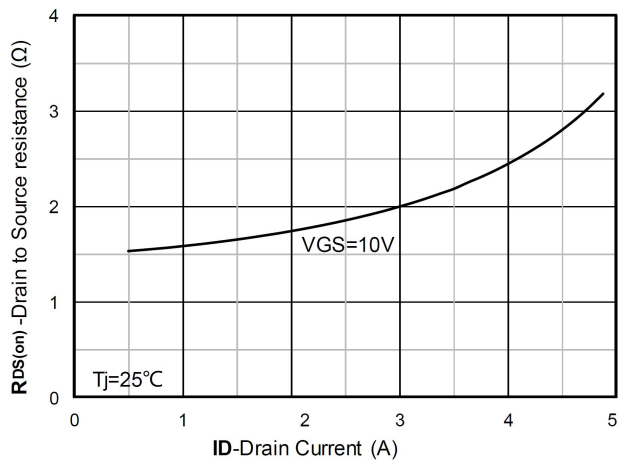
Gate Charge



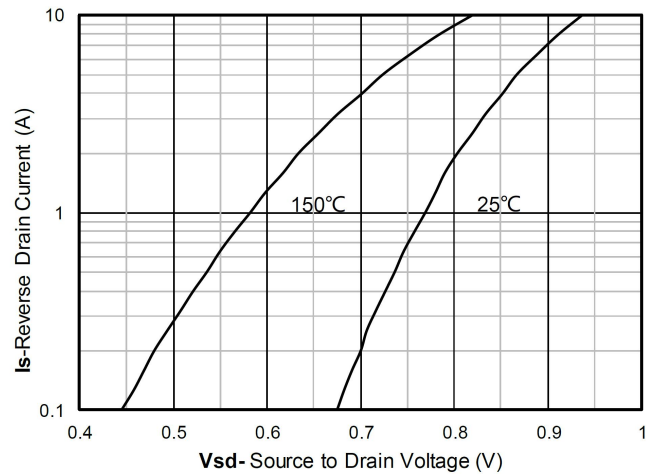
Current dissipation



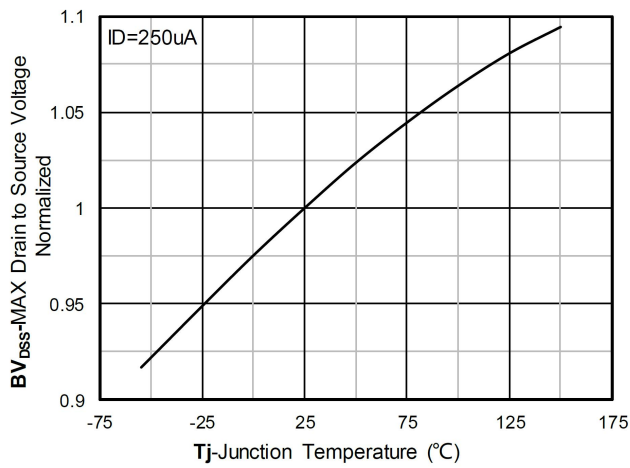
Power dissipation



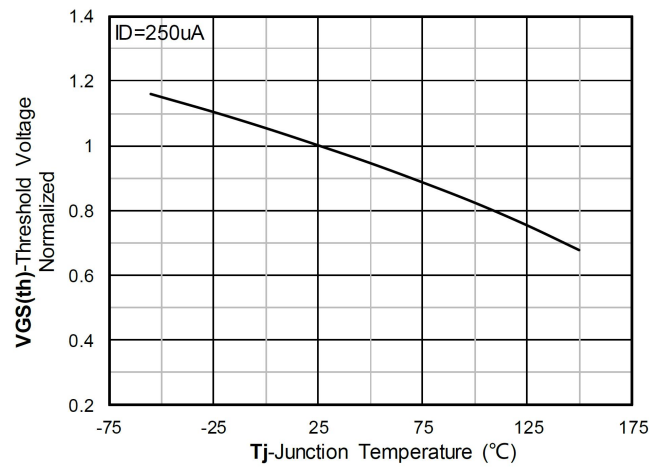
$R_{DS(on)}$ VS Drain Current



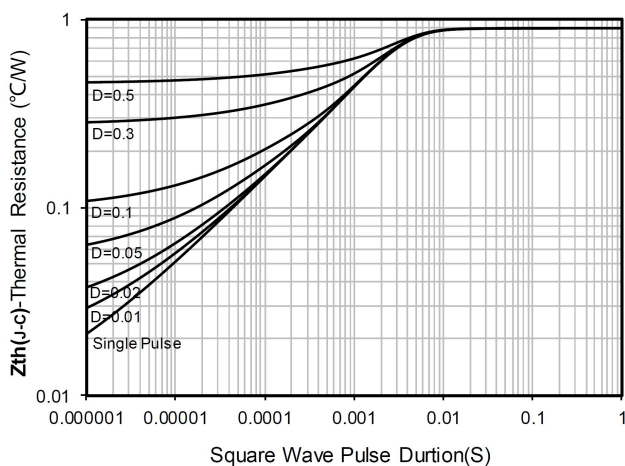
Forward characteristics of reverse diode



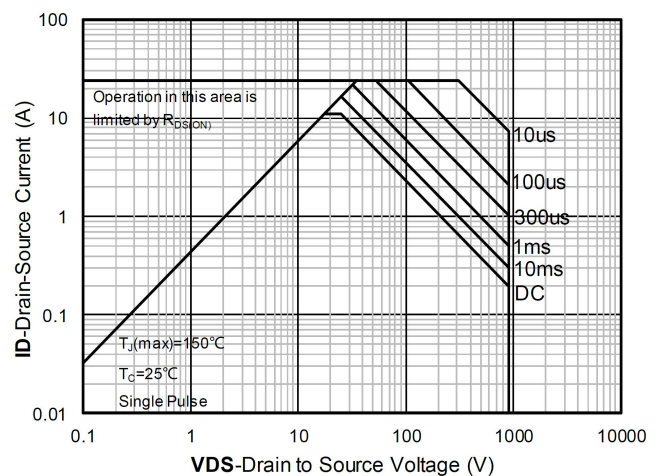
Normalized breakdown voltage



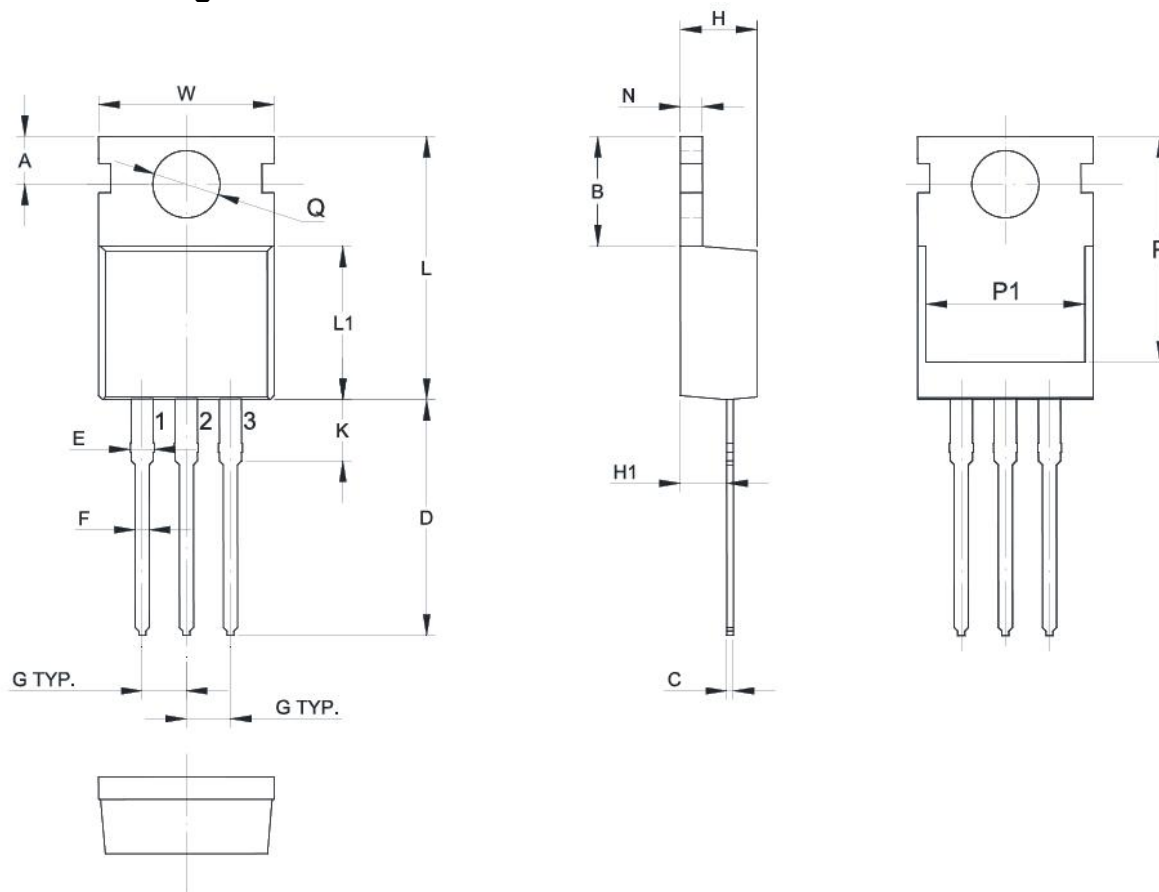
Normalized Threshold voltage



Maximum Transient Thermal Impedance



Safe Operation Area

TTO-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