

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
100V	14mΩ@10V	70A



合肥矽普半导体

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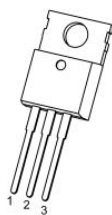
Feature

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

Applications

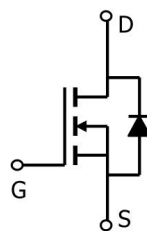
- Power switching application
- PWM Application
- DC-DC Converter

Package

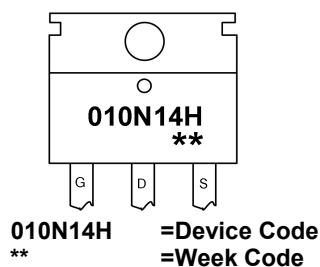


TO-220-3L-C(1:G 2:D 3:S)

Circuit diagram



Marking



Order Information

Device	Package	Unite/Tube
SP010N14HTQ	TO-220	50

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

Parameter	Symbol	Rating	Units
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current (Tc=25°C)	I_D	70	A
Continuous Drain Current (Tc=100°C)	I_D	44	A
Pulsed Drain Current ²	I_{DM}	280	A
Single Pulse Avalanche Energy ³	E_{AS}	106	mJ
Total Power Dissipation ⁴ (Tc=25°C)	P_D	142	W
Thermal Resistance Junction-Case ¹	$R_{\theta JC}$	0.88	°C/W
Storage Temperature Range	T_{STG}	-55 to 150	°C
Operating Junction Temperature Range	T_J	-55 to 150	°C

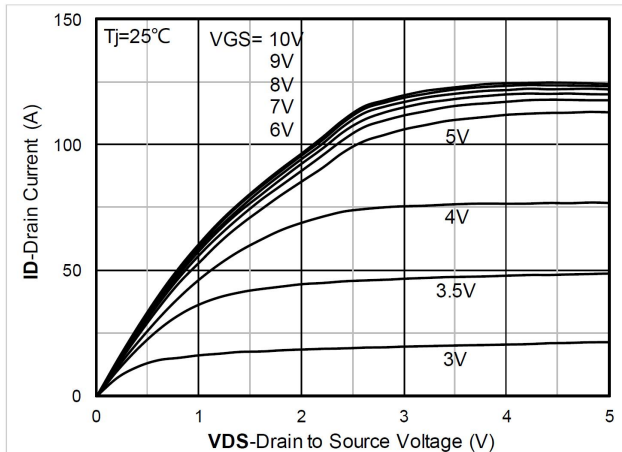
Electrical characteristics (Ta=25°C, unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	VGS=0V , ID= 250uA	100	---	---	V
Drain-Source Leakage Current	IDSS	VDS= 80V , VGS=0V , TJ=25℃	---	---	1	uA
Gate-Source 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 ²	RDS(ON)	VGS= 10V , ID= 20A	---	14	18	mΩ
Dynamic Characteristics						
Input Capacitance	Ciss	VDS= 50V , VGS=0V , f=1MHz	---	4726	---	pF
Output Capacitance	Coss		---	326	---	
Reverse Transfer Capacitance	Crss		---	247	---	
Switching Characteristics						
Total Gate Charge (4.5V)	Qg	VDS= 50V , VGS= 10V , ID= 10A	---	75	---	nC
Gate-Source Charge	Qgs		---	15.5	---	
Gate-Drain Charge	Qgd		---	20.3	---	
Turn-On Delay Time	Td(on)	VDD= 50V,ID= 10A, VGS= 10V,RGEN=3Ω	---	15	---	ns
Rise Time	Tr		---	11	---	
Turn-Off Delay Time	Td(off)		---	57	---	
Fall Time	Tf		---	15	---	
Source-Drain Diode Characteristics						
Diode Forward Voltage ²	VSD	VGS=0V , IS= -1A , TJ=25℃	---	---	1.2	V

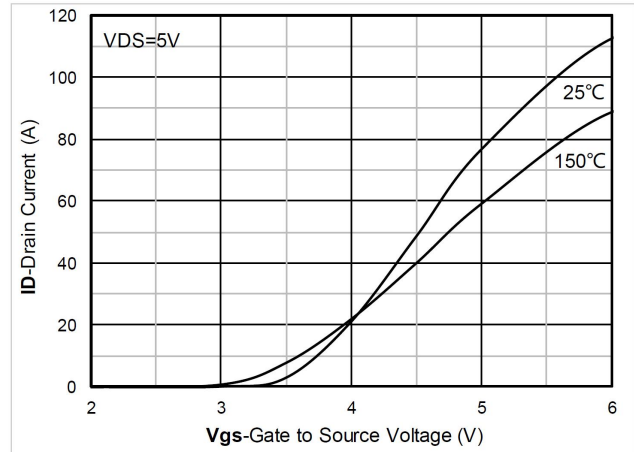
Note :

- The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
- The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
- The EAS data shows Max. rating . The test condition is $V_{DD}=50V, V_{GS}=10V, L=0.1mH, R_g=25\Omega$
- The power dissipation is limited by 150°C junction temperature

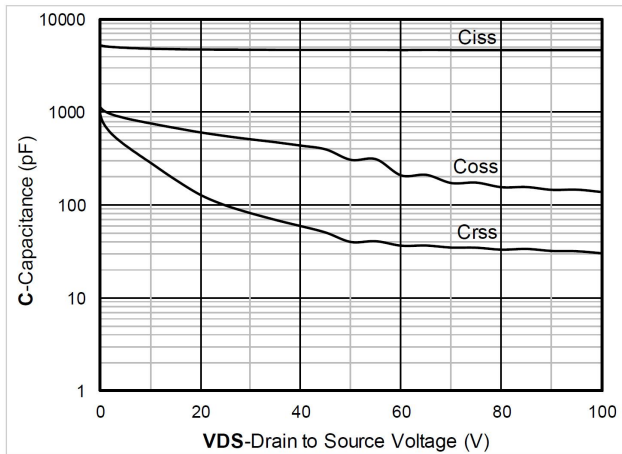
Typical Characteristics



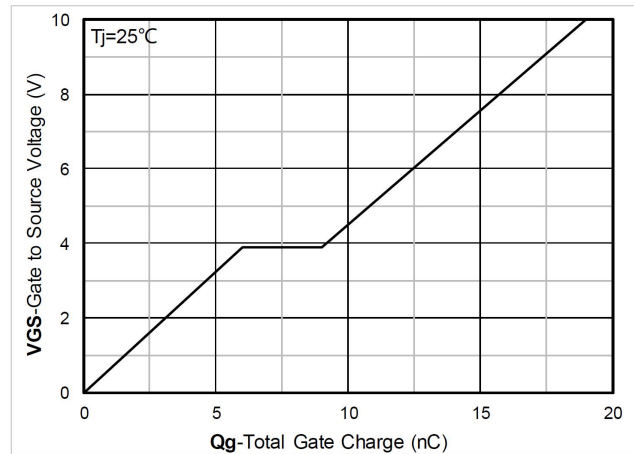
Output Characteristics



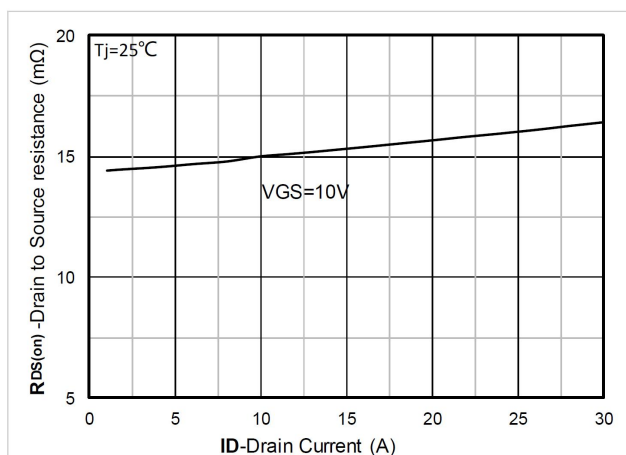
Transfer Characteristics



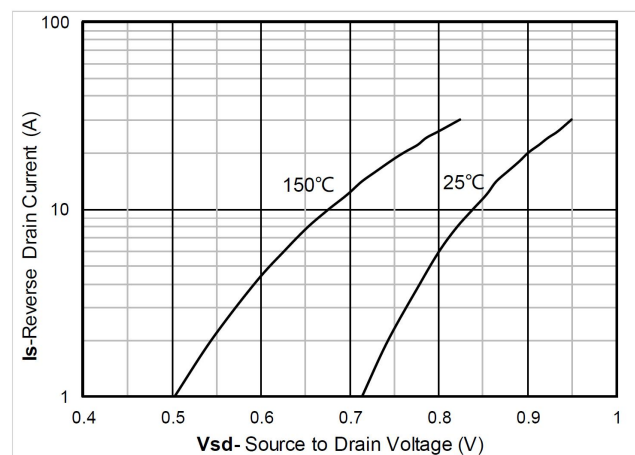
Capacitance Characteristics



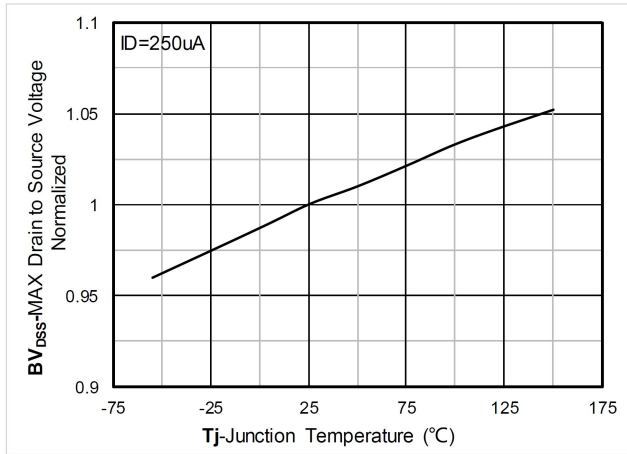
Gate Charge



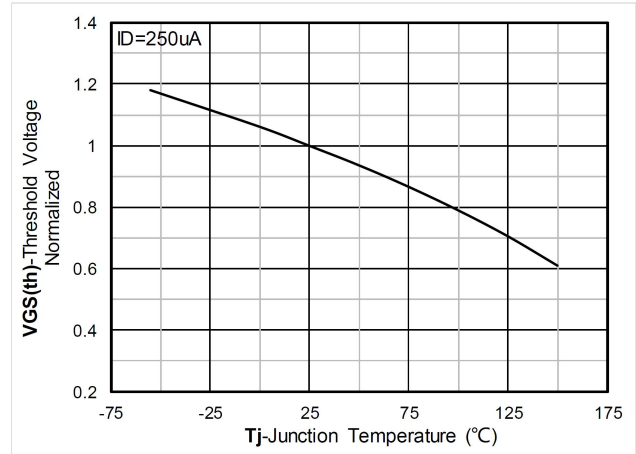
RDS(on) VS Drain Current



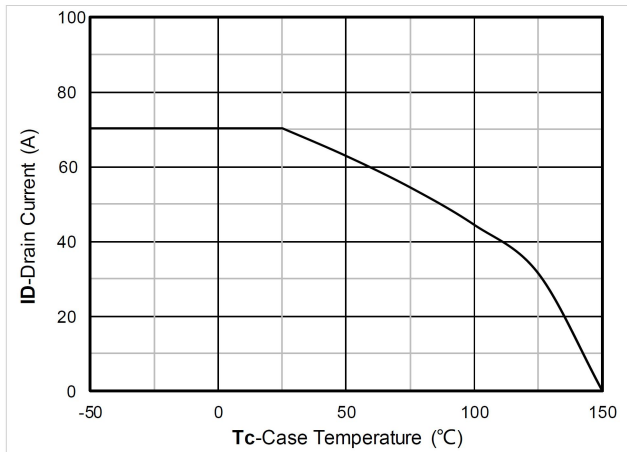
Forward characteristics of reverse diode



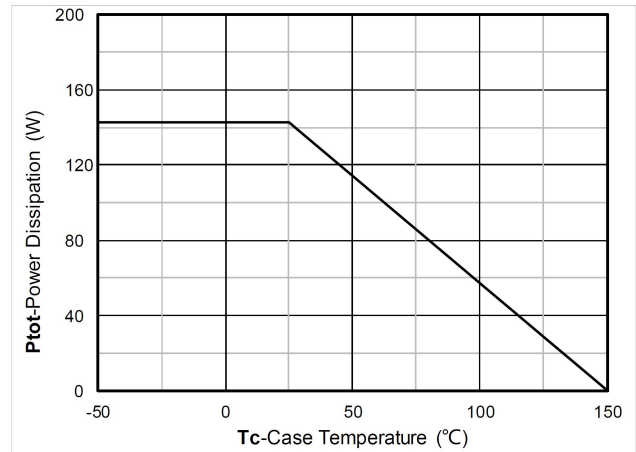
Normalized breakdown voltage



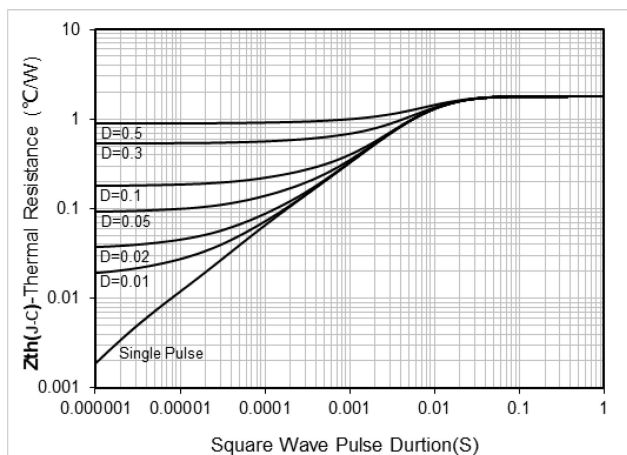
Normalized Threshold voltage



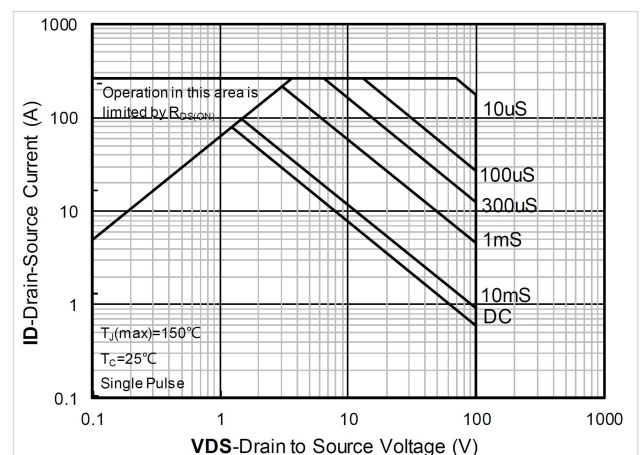
Current dissipation



Power dissipation

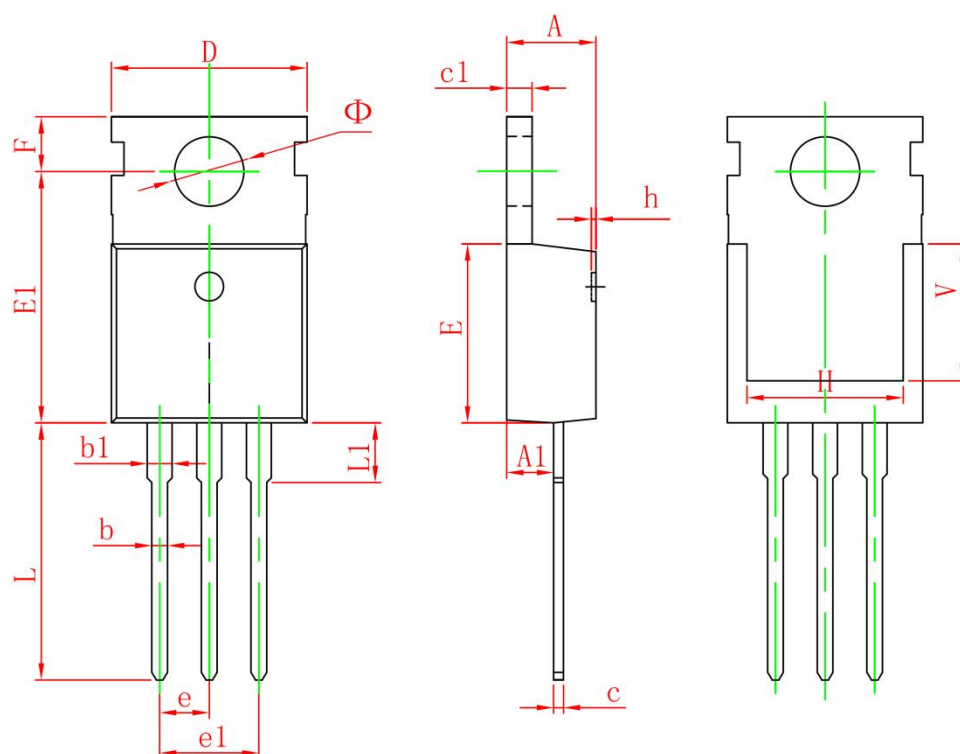


Maximum Transient Thermal Impedance



Safe Operation Area

TO-220-3L-C 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