

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
100V	13mΩ@10V	55A
	16mΩ@4.5V	



合肥矽普半导体

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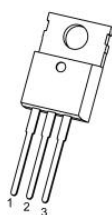
Feature

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

Applications

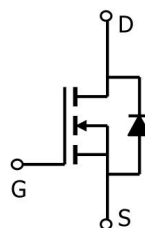
- Power switching application
- PWM Application
- DC-DC Converter

Package

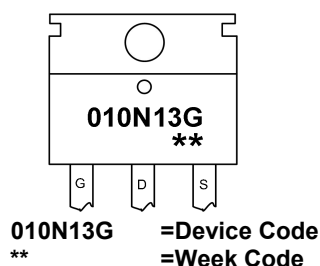


TO-220-3L-C(1:G 2:D 3:S)

Circuit diagram



Marking



Order Information

Device	Package	Unite/Tube
SP010N13GTQ	TO-220-3L	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	55	A
Continuous Drain Current (Tc=100°C)	I_D	39	A
Pulsed Drain Current ²	I_{DM}	220	A
Single Pulse Avalanche Energy ³	E_{AS}	24	mJ
Total Power Dissipation ⁴ (Tc=25°C)	P_D	160	W
Thermal Resistance Junction-Case ¹	$R_{\theta JC}$	0.78	°C/W
Storage Temperature Range	T_{STG}	-55 to 150	°C
Operating Junction Temperature Range	T_J	-55 to 150	°C

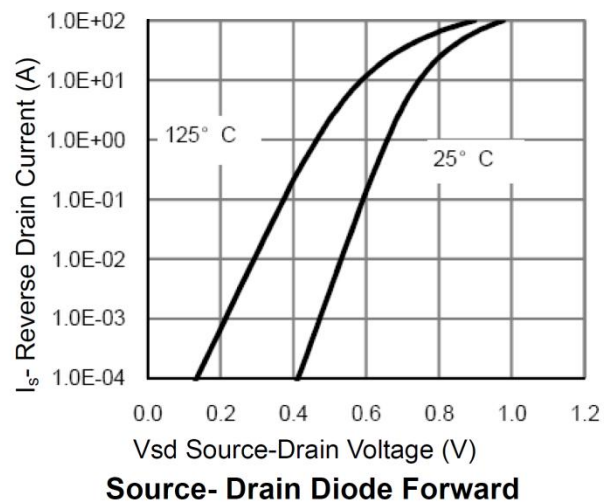
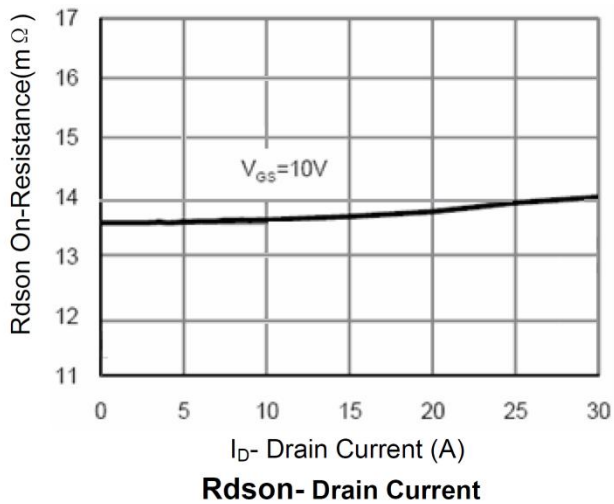
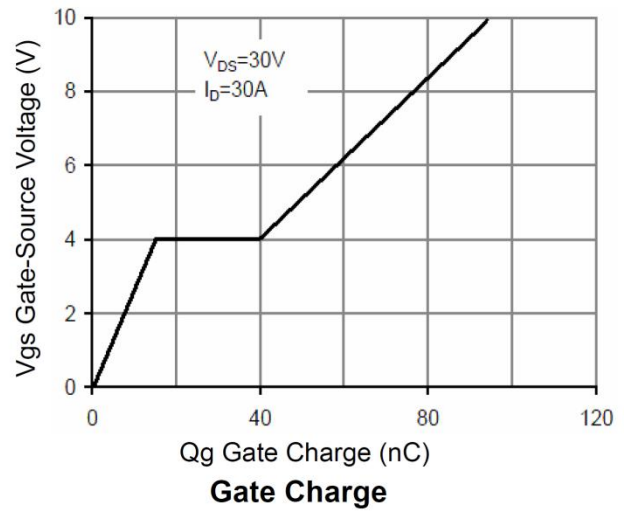
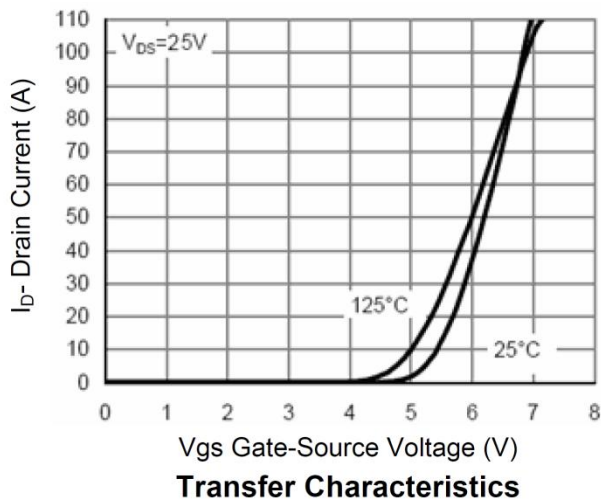
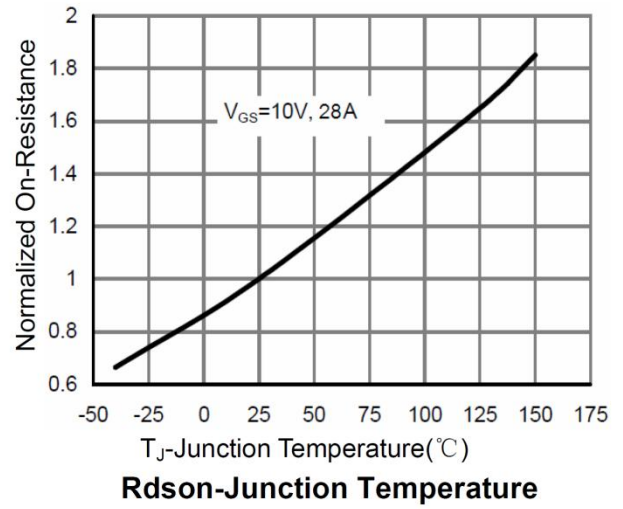
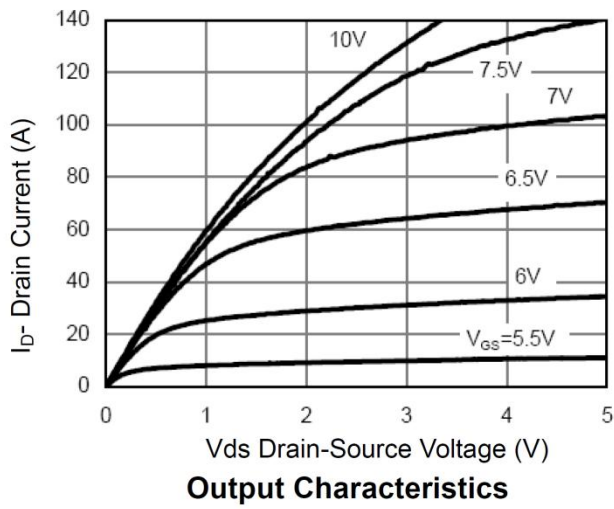
Electrical characteristics (Ta=25°C, unless otherwise noted)

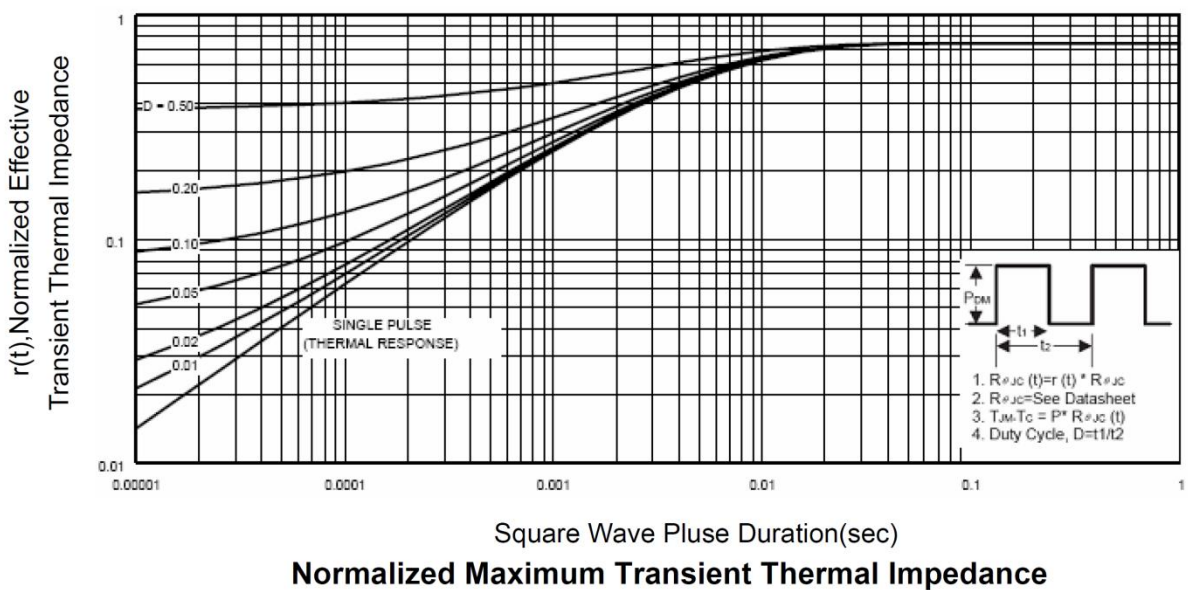
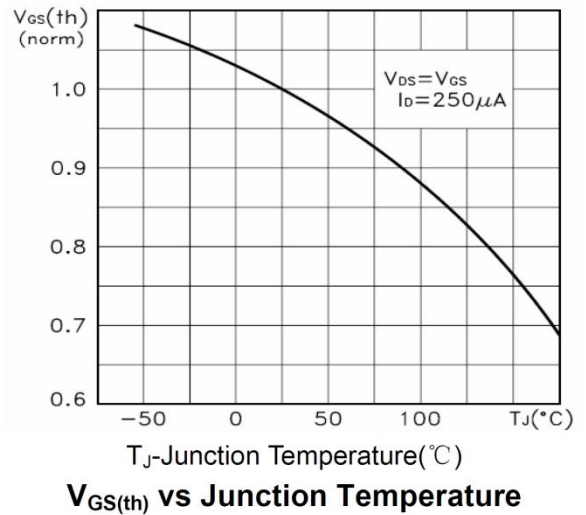
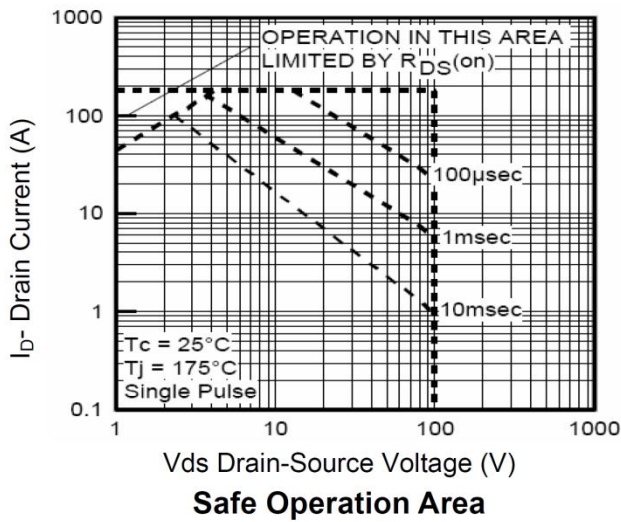
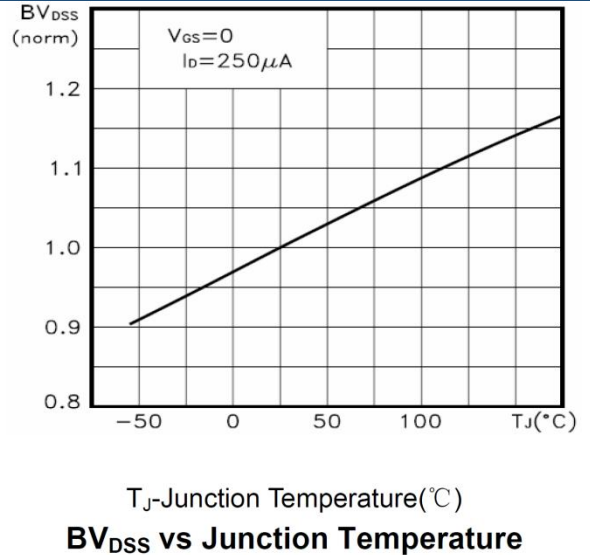
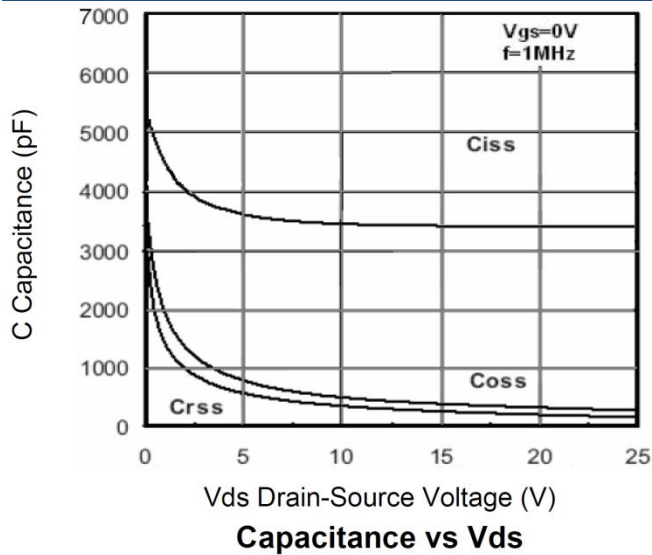
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	VGS=0V , ID= 250uA	100	---	---	V
Drain-Source Leakage Current	IDSS	VDS= 80V , VGS=0V , TJ=25℃	---	---	1	uA
Gate-Source Leakage Current	IGSS	VGS= ±20V , VDS=0V	---	---	±100	nA
Gate Threshold Voltage	VGS(th)	VGS=VDS , ID = 250uA	1.0	1.8	2.5	V
Static Drain-Source On-Resistance ²	R _{DS(ON)}	VGS= 10V , ID= 10A	---	13	17	mΩ
		VGS= 4.5V , ID= 6A	---	16	21	
Dynamic Characteristics						
Input Capacitance	C _{iss}	VDS= 50V , VGS=0V , f=1MHz	---	770	---	pF
Output Capacitance	C _{oss}		---	170	---	
Reverse Transfer Capacitance	C _{rss}		---	5	---	
Switching Characteristics						
Total Gate Charge (4.5V)	Q _g	VDS= 50V , VGS= 10V , ID= 10A	---	13	---	nC
Gate-Source Charge	Q _{gs}		---	7	---	
Gate-Drain Charge	Q _{gd}		---	3	---	
Turn-On Delay Time	T _{d(on)}	VDD= 50V,ID= 10A, VGS= 10V,RGEN=6Ω	---	4.3	---	ns
Rise Time	T _r		---	5	---	
Turn-Off Delay Time	T _{d(off)}		---	17	---	
Fall Time	T _f		---	9	---	
Source-Drain Diode Characteristics						
Diode Forward Voltage ²	V _{SD}	VGS=0V , IS= -1A , TJ=25℃	---	---	1.2	V

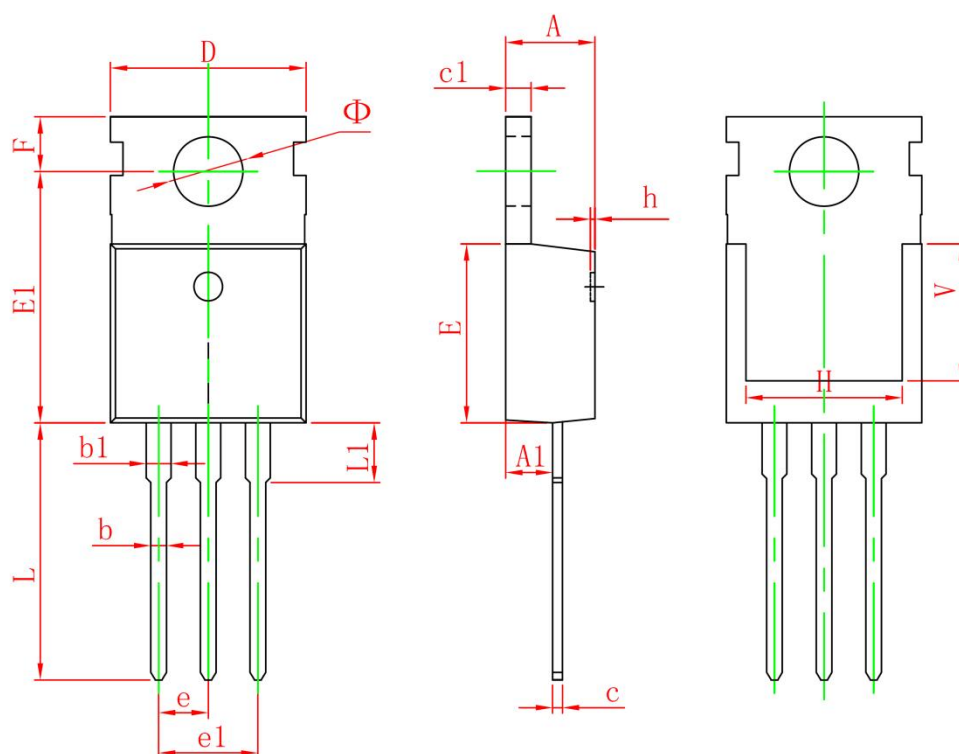
Note :

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

Typical Characteristics





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