

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
650V	$0.67\Omega@10V$	10A



合肥矽普半导体

Siliup Semiconductor Technology Co., Ltd

技术 品质 服务

www.siliup.com

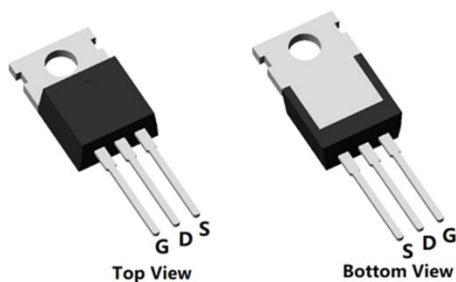
Feature

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

Applications

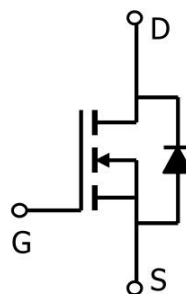
- DC-DC Converter
- Ideal for high-frequency switching and synchronous rectification

Package

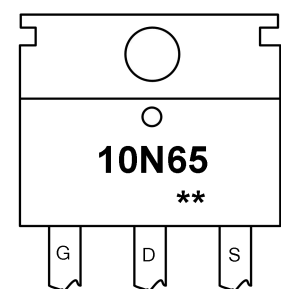


TO-220-3L(1:G 2:D 3:S)

Circuit diagram



Marking



10N65 :Device Code
****** :Week Code

Order Information

Device	Package	Unit/Tube
SP10N65TQ	TO-220-3L	50

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

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	650	V
Gate-Source Voltage	V_{GS}	± 30	V
Continuous Drain Current (Tc=25°C)	I_D	10	A
Continuous Drain Current (Tc=100°C)	I_D	6.66	A
Pulsed Drain Current	I_{DM}	40	A
Single Pulse Avalanche Energy ¹	E_{AS}	500	mJ
Power Dissipation (Tc=25°C)	P_D	130	W
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	0.96	°C/W
Storage Temperature Range	T_{STG}	-55 to 150	°C
Operating Junction Temperature Range	T_J	-55 to 150	°C

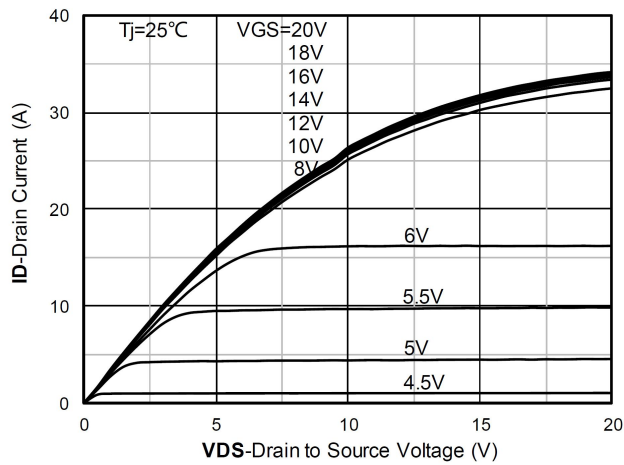
Electrical characteristics (Ta=25°C, unless otherwise noted)

Characteristics	Symbol	Test Condition	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	ID = 250μA, VGS = 0V	650	-	-	V
Drain Cut-Off Current	IDSS	VDS = 520V, VGS = 0V	-	-	1	μA
Gate Leakage Current	IGSS	VGS = ±30V, VDS = 0V	-	-	±100	nA
Gate Threshold Voltage	VGS(th)	VDS = VGS, ID = 250μA	2.0	3.0	4.0	V
Drain-Source ON Resistance	RDS(ON)	VGS = 10V, ID = 3A	-	0.67	0.85	Ω
Dynamic Characteristics						
Input Capacitance	Ciss	VDS =25V, VGS = 0V, f = 1.0MHz	-	1645	-	pF
Output Capacitance	Coss		-	136	-	
Reverse Transfer Capacitance	Crss		-	11	-	
Total Gate Charge	Qg	VDS=520V , VGS=10V , ID=10A	-	32	-	nC
Gate-Source Charge	Qgs		-	9	-	
Gate-Drain Charge	Qgd		-	11	-	
Switching Characteristics						
Turn-On Delay Time	td(on)	VDD=325V , VGS=10V , RG=10Ω, ID=10A	-	29	-	nS
Rise Time	tr		-	20	-	
Turn-Off Delay Time	td(off)		-	55	-	
Fall Time	tf		-	21	-	
Drain-Source Body Diode Characteristics						
Source-Drain Diode Forward Voltage	VSD	Is = 1A, VGS = 0V	-	-	1.2	V
Maximum Body-Diode Continuous Current	Is		-	-	10	A
Body Diode Reverse Recovery Time	Trr	Is = 10A, dIF/dt = 100A/us	-	535	-	nS
Body Diode Reverse Recovery Charge	Qrr		-	3.22	-	uC

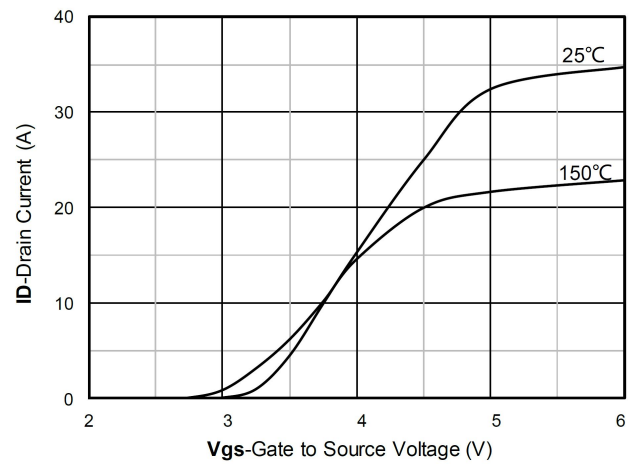
Note :

- The test condition is $V_{DD} = 50V, V_{GS} = 10V, L = 10mH, R_G = 30\Omega$;

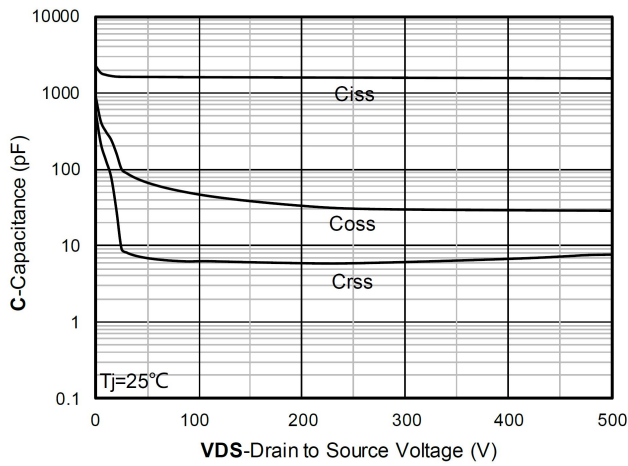
Typical Characteristics



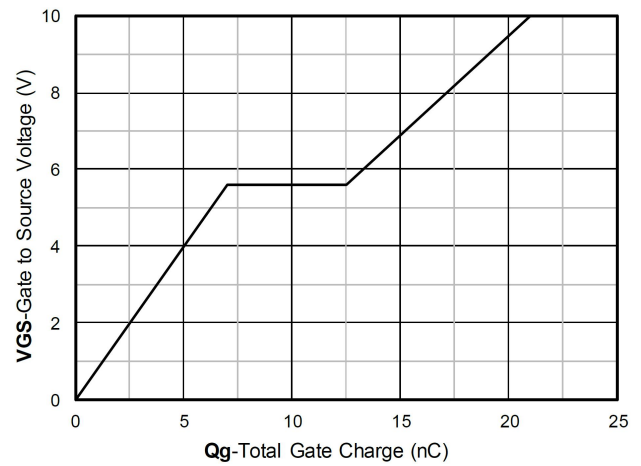
Output Characteristics



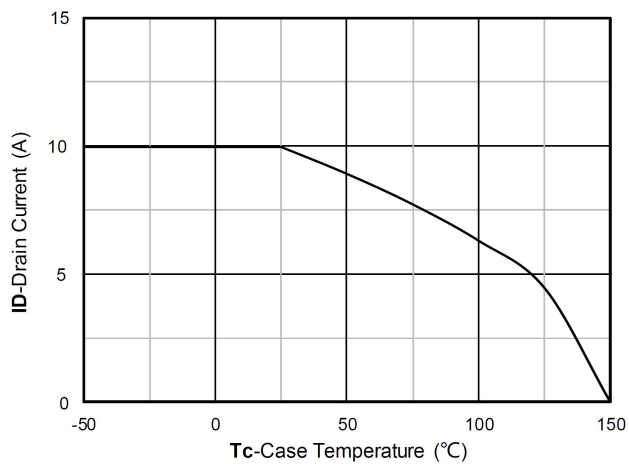
Transfer Characteristics



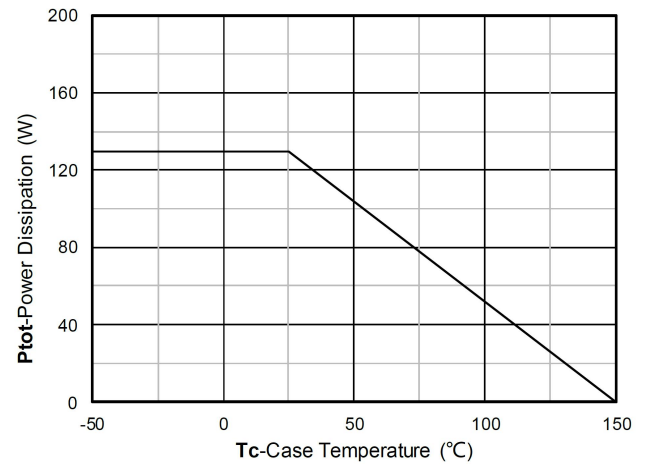
Capacitance Characteristics



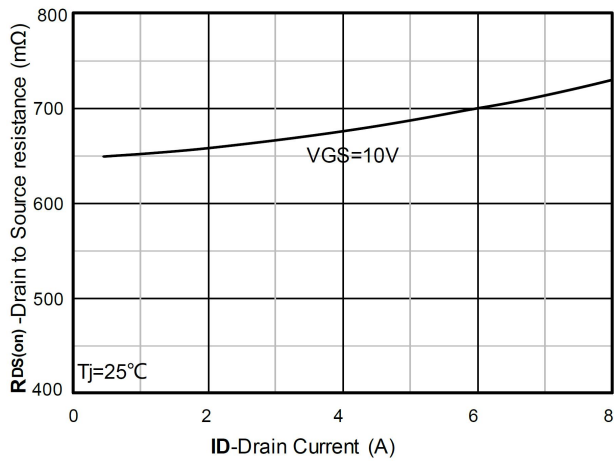
Gate Charge



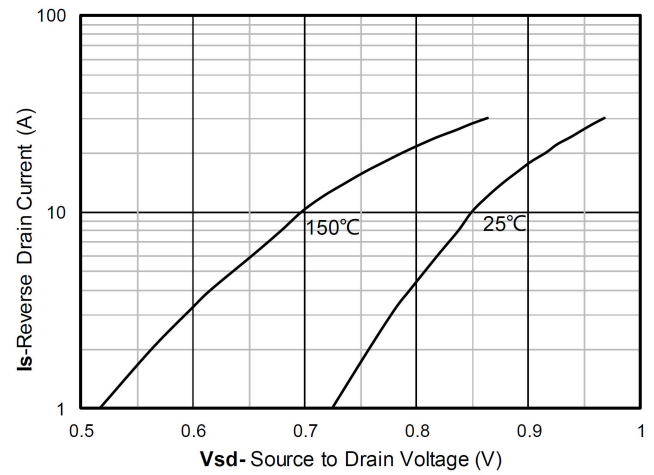
Current dissipation



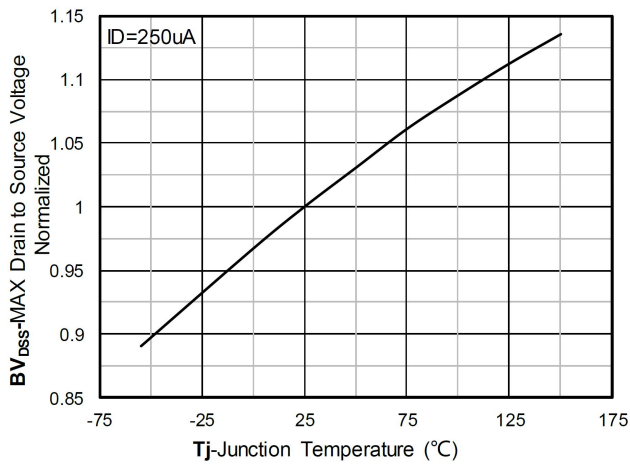
Power dissipation



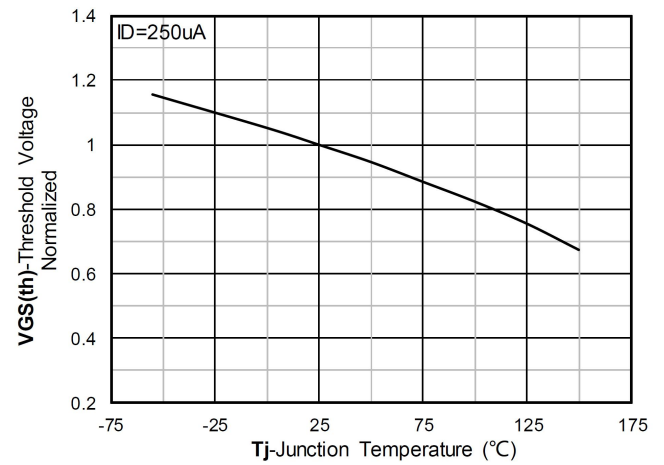
RDS(on) VS Drain Current



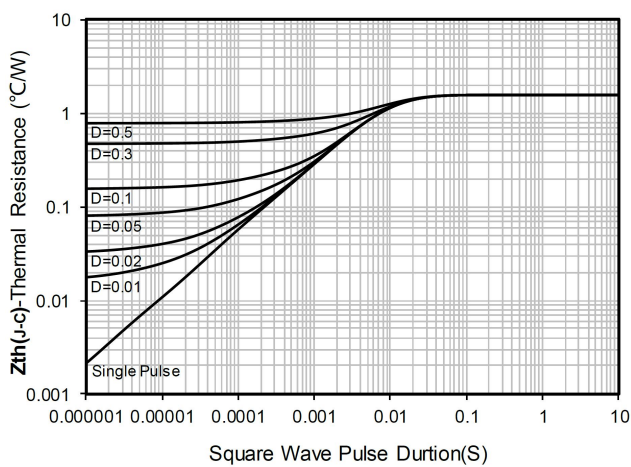
Forward characteristics of reverse diode



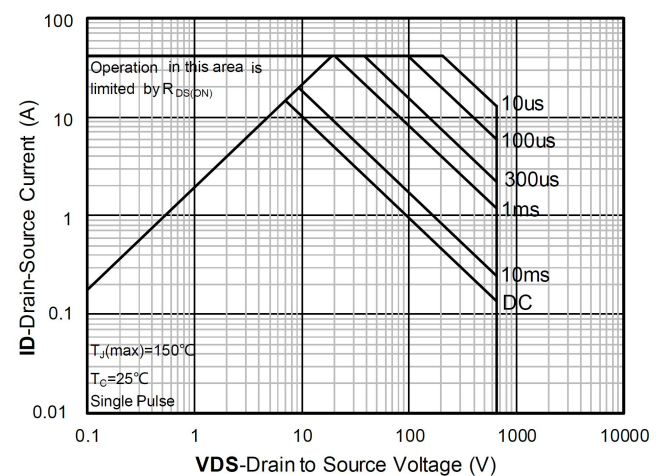
Normalized breakdown voltage



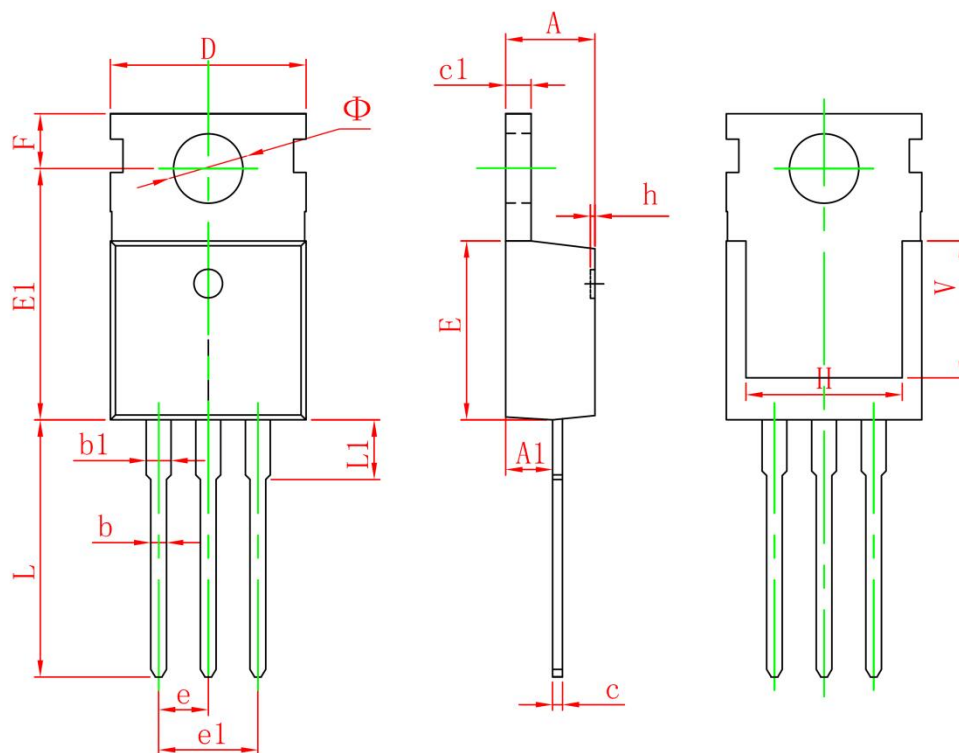
Normalized Threshold voltage



Maximum Transient Thermal Impedance



Safe Operation Area

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