

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
650V	$0.34\Omega@10V$	11A



合肥矽普半导体

Siliup Semiconductor Technology Co., Ltd

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Feature

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

Applications

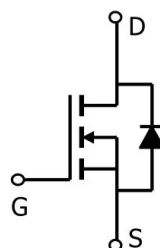
- PD charger
- Large screen display
- Telecom power
- Server power

Package

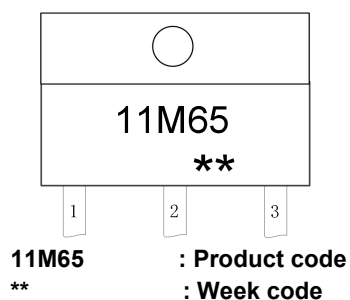


TO-220F

Circuit diagram



Marking



Order Information

Device	Package	Unit/Tube
SP11M65TG	TO-220F	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	11	A
Continuous drain current (Tc=100°C)	I_D	7	A
Pulsed drain current	I_{DM}	33	A
Power dissipation (Tc=25°C)	P_D	31	W
Single pulsed avalanche energy ¹	E_{AS}	220	mJ
Thermal resistance Junction-to-Case	$R_{\theta JC}$	4.03	°C/W
Storage Temperature Range	T_{STG}	-55 to 150	°C
Operating Junction Temperature Range	T_J	-55 to 150	°C

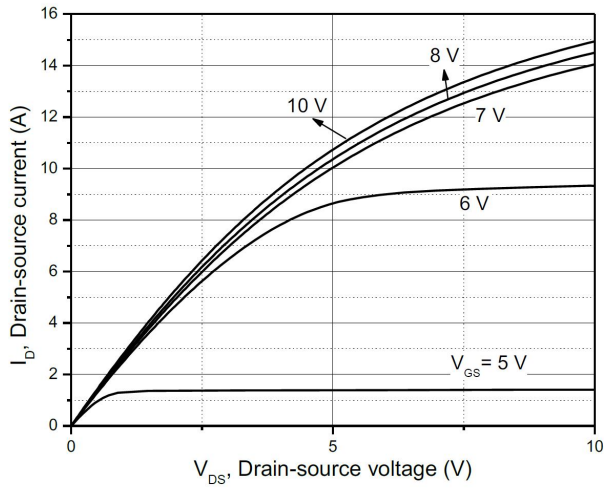
Electrical characteristics (Ta=25°C, unless otherwise noted)

Characteristics	Symbol	Test Condition	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$I_D = 250\mu A, V_{GS} = 0V$	650	-	-	V
Drain Cut-Off Current	I_{DSS}	$V_{DS} = 520V, V_{GS} = 0V$	-	-	1	μA
Gate Leakage Current	I_{GSS}	$V_{GS} = \pm 30V, V_{DS} = 0V$	-	-	± 0.1	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	2	3	4	V
Drain-Source ON Resistance	$R_{DS(ON)}$	$V_{GS} = 10V, I_D = 5.5A$	-	0.34	0.42	Ω
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{DS} = 50V, V_{GS} = 0V, f = 1.0MHz$	-	702	-	pF
Output Capacitance	C_{oss}		-	53	-	
Reverse Transfer Capacitance	C_{rss}		-	3	-	
Total Gate Charge	Q_g	$V_{DS} = 520V, V_{GS} = 10V, I_D = 10.5A$	-	15	-	nC
Gate-Source Charge	Q_{gs}		-	4	-	
Gate-Drain Charge	Q_{gd}		-	5	-	
Switching Characteristics						
Turn-On Delay Time	$t_{d(on)}$	$V_{GS} = 10V, V_{DS} = 520V, I_D = 10.5A, R_G = 25\Omega$	-	24	-	nS
Rise Time	t_r		-	24	-	
Turn-Off Delay Time	$t_{d(off)}$		-	34	-	
Fall Time	t_f		-	37	-	
Drain-Source Body Diode Characteristics						
Source-Drain Diode Forward Voltage	V_{SD}	$I_S = 1A, V_{GS} = 0V$	-	-	1.2	V
Maximum Body-Diode Continuous Current	I_S		-	-	11	A
Reverse Recovery Time	T_{rr}	$I_S = 5.5A, di/dt = 100A/\mu s, T_J = 25^\circ C$	-	280	-	nS
Reverse Recovery Charge	Q_{rr}		-	3.5	-	μC

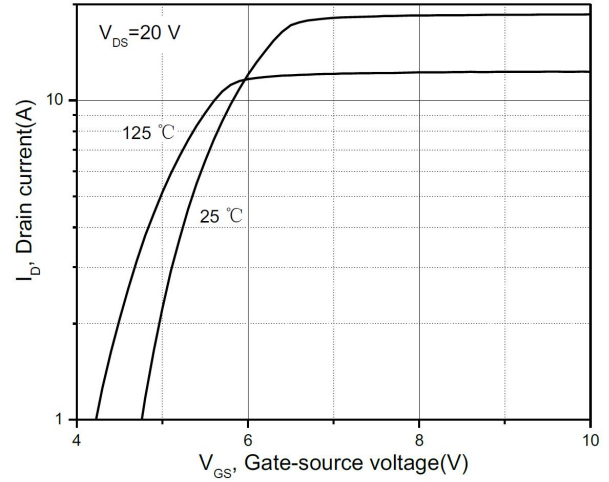
Note :

1. The test condition is VDD=75V, VGS=10V, L=10mH, RG=25 Ω

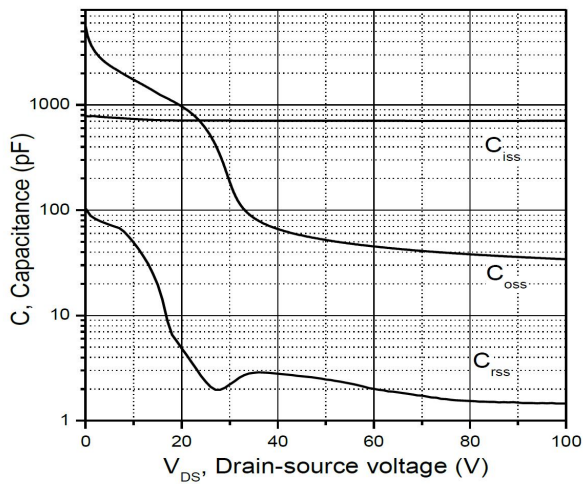
Typical Characteristics



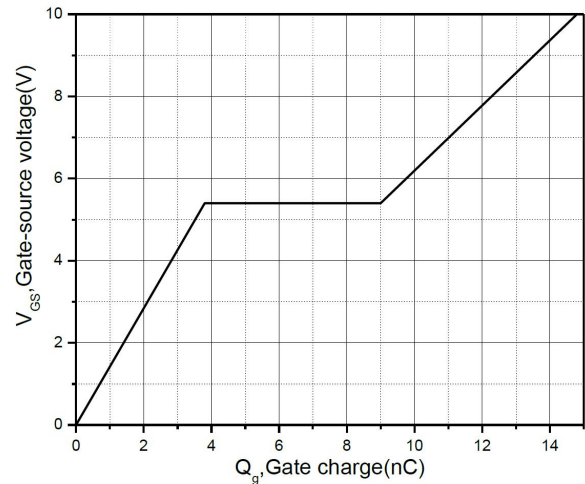
Typ. output characteristics



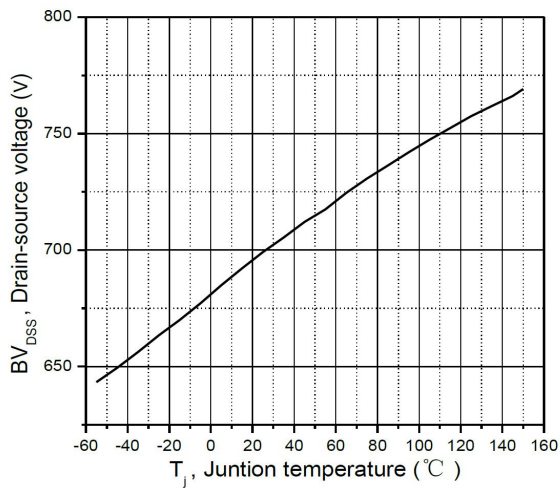
Typ. transfer characteristics



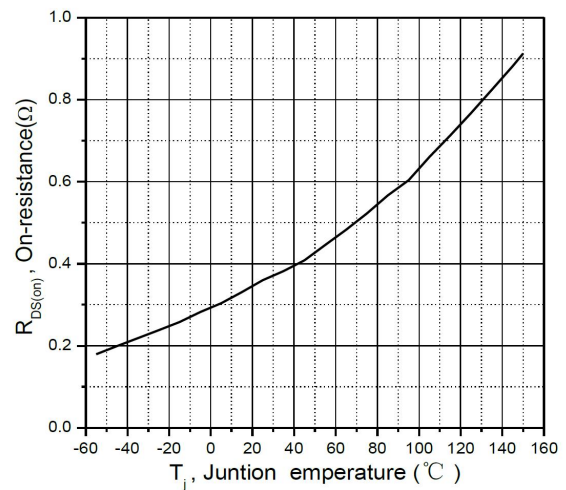
Typ. capacitances



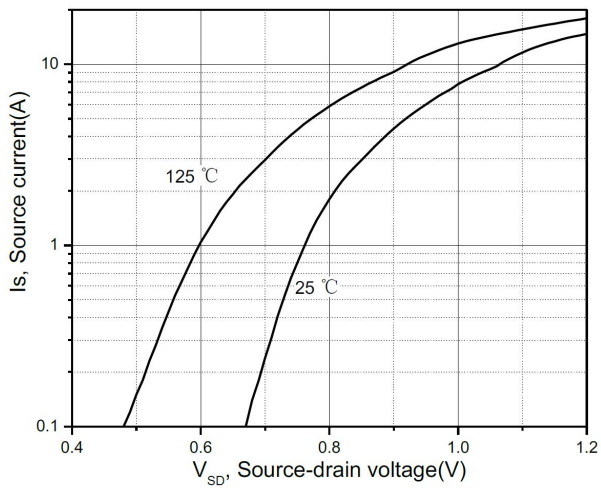
Typ. gate charge



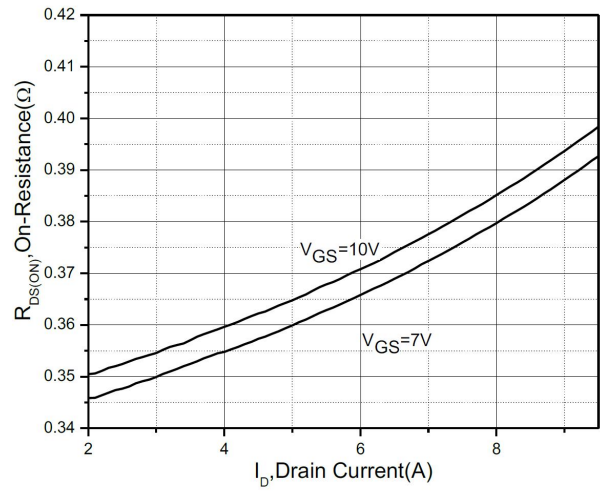
Drain-source breakdown voltage



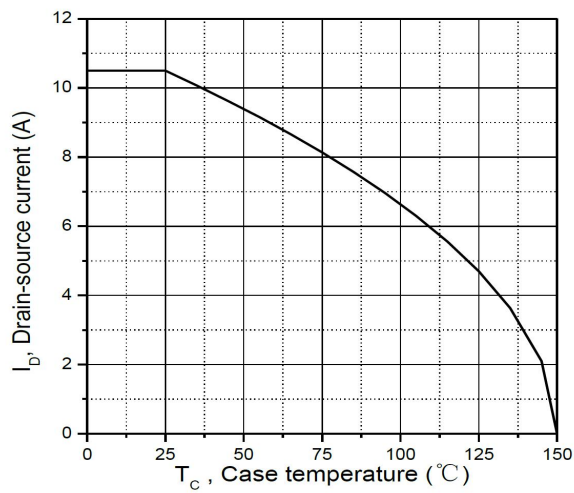
Drain-source on-state resistance



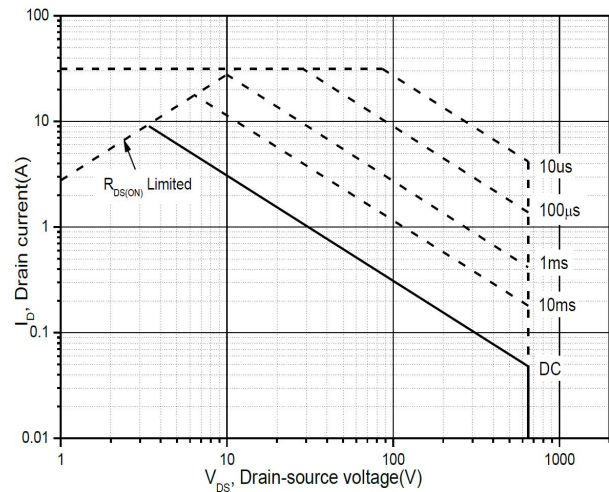
Forward characteristic of body diode



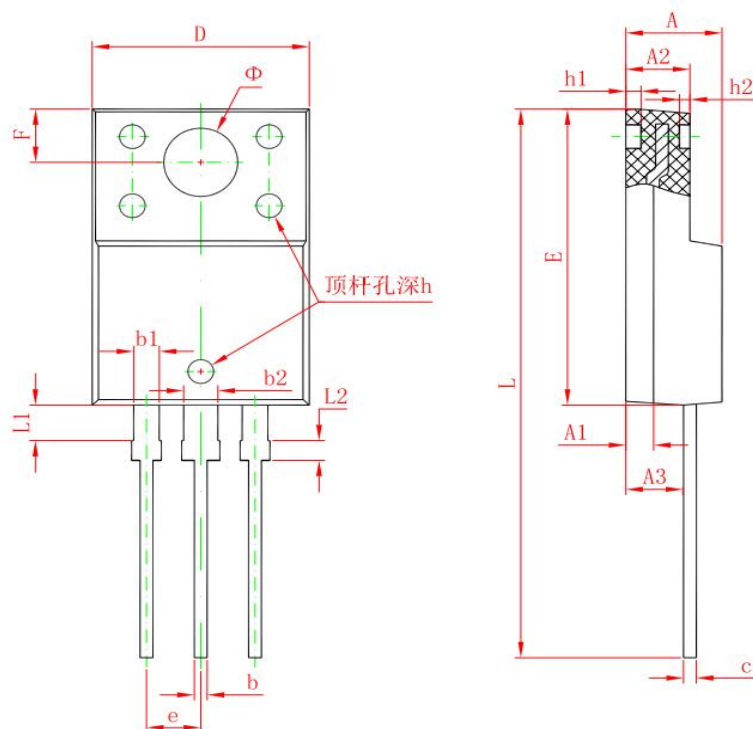
Drain-source on-state resistance



Drain current



Safe operation area $T_C = 25^{\circ}C$

TO-220F Package Information


Symbol	Dimensions In Millimeters	
	Min.	Max.
A	4.300	4.700
A1	1.300 REF.	
A2	2.800	3.200
A3	2.500	2.900
b	0.500	0.750
b1	1.100	1.350
b2	1.500	1.750
c	0.500	0.750
D	9.960	10.360
E	14.800	15.200
e	2.540 TYP.	
F	2.700 REF.	
Φ	3.500 REF.	
h	0.000	0.300
h1	0.800 REF.	
h2	0.500 REF.	
L	28.000	28.400
L1	1.700	1.900
L2	0.900	1.100