

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
-60V	3.5mΩ@-10V	-200A



合肥矽普半导体

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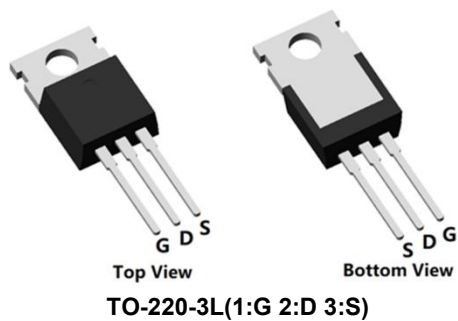
Feature

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

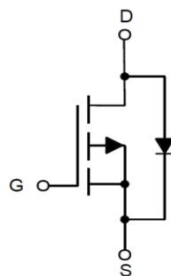
Applications

- Power switching application
- DC-DC Converter
- Power Management

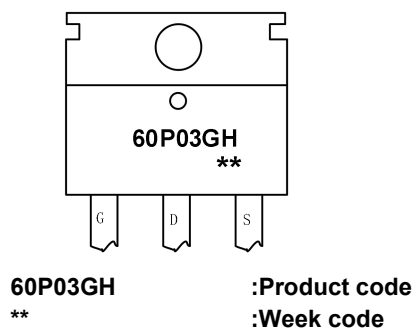
Package



Circuit diagram



Marking



Order Information

Device	Package	Unit/Tube
SP60P03GHTQ	TO-220-3L	50

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

Parameter	Symbol	Rating	Unit
Drain source voltage	V_{DS}	-60	V
Gate source voltage	V_{GS}	± 20	V
Continuous drain current (Tc=25°C)	I_D	-200	A
Continuous drain current (Tc=100°C)	I_D	-134	A
Pulsed drain current	I_{DM}	-800	A
Power dissipation (Tc=25°C)	P_D	145	W
Single pulsed avalanche energy ¹	E_{AS}	1806	mJ
Thermal resistance junction-to-case	$R_{\theta JC}$	0.86	°C/W
Storage Temperature Range	T_{STG}	-55 to 150	°C
Operating Junction Temperature Range	T_J	-55 to 150	°C

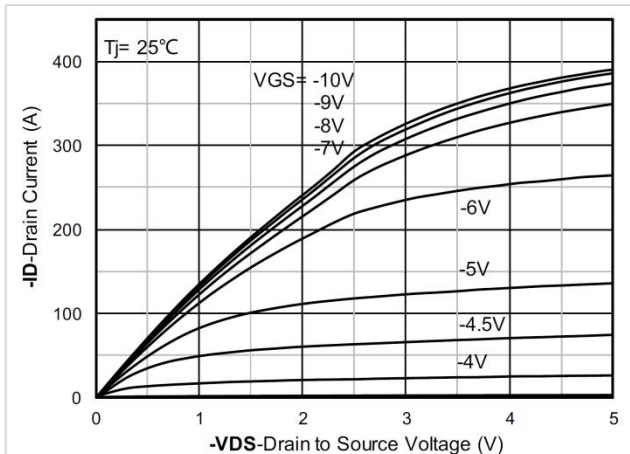
Electrical characteristics (Ta=25°C, unless otherwise noted)

Characteristics	Symbol	Test Condition	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V I _D =-250μA	-60	-	-	V
Drain Cut-Off Current	I _{DSS}	V _{DS} =-48V, V _{GS} =0V	-	-	-1	μA
Gate Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V	-	-	±0.1	
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =-250μA	-1.5	-2.5	-3.5	V
Drain-Source ON Resistance	R _{DS(ON)}	V _{GS} =-10V, I _D =-20A	-	3.8	4.8	mΩ
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} =-30V, V _{GS} =0V, f = 1MHz	-	8364	-	pF
Output Capacitance	C _{oss}		-	1517	-	
Reverse Transfer Capacitance	C _{rss}		-	110	-	
Switching Characteristics						
Total Gate Charge	Q _g	VDS= -30V, ID= -70A, VGS= -10V	-	82	-	nC
Gate-Source Charge	Q _{gs}		-	26	-	
Gate-Drain Charge	Q _{gd}		-	18	-	
Turn-On Delay Time	t _{d(on)}	VDD= -20V, ID= -70A, VGS= -10V, R _G =2.6Ω	-	20	-	ns
Rise Time	t _r		-	58	-	
Turn-Off Delay Time	t _{d(off)}		-	145	-	
Fall Time	t _f		-	168	-	
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		-	-	-130	A
Reverse Recovery Time	T _{rr}	I _S =-50A, di/dt=-100A/us, T _J =25℃	-	65	-	ns
Reverse Recovery Charge	Q _{rr}		-	116	-	nC

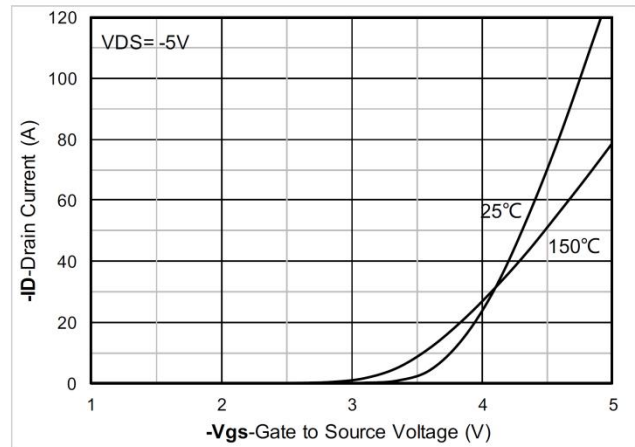
Note:

- E_{AS} is tested at starting $T_J = 25^\circ C$, $V_{DD}=-50V, V_{GS}=-10V, L=0.5mH, R_G=25m\Omega$;

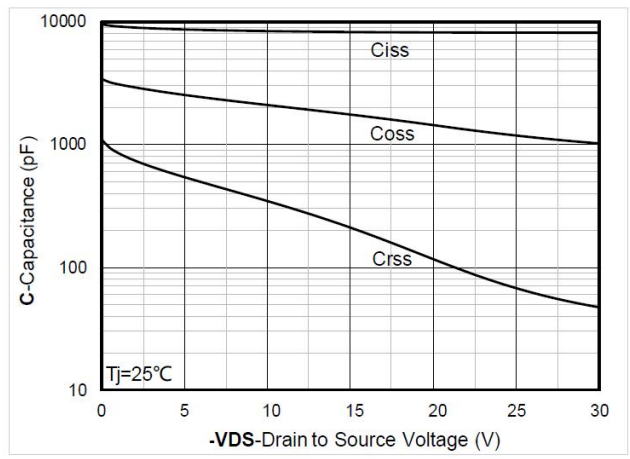
Typical Characteristics



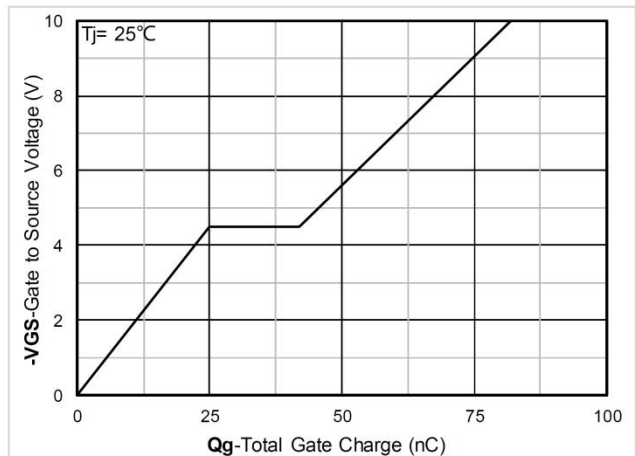
Output Characteristics



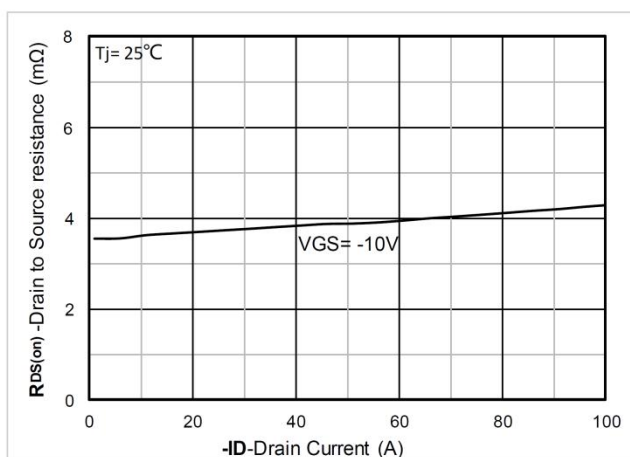
Transfer Characteristics



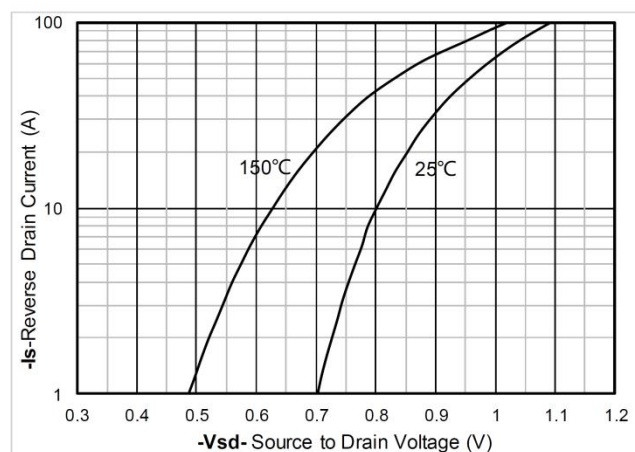
Capacitance Characteristics



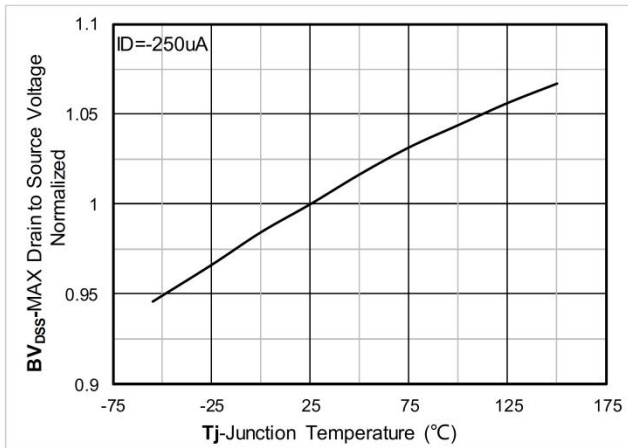
Gate Charge



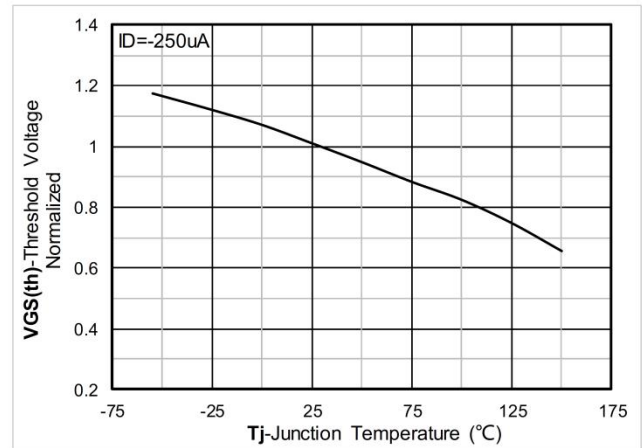
$R_{DS(on)}$ VS Drain Current



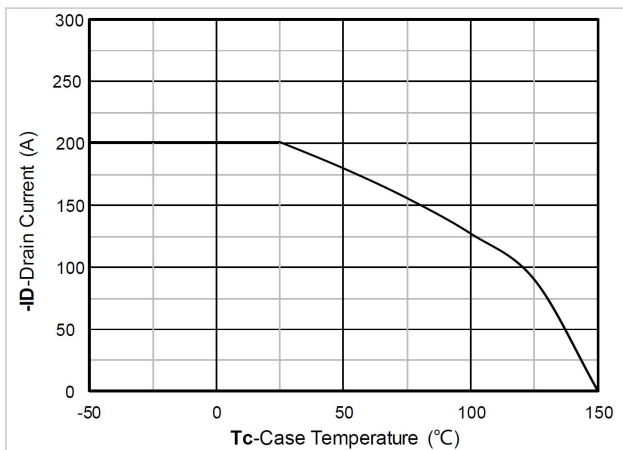
Forward characteristics of reverse diode



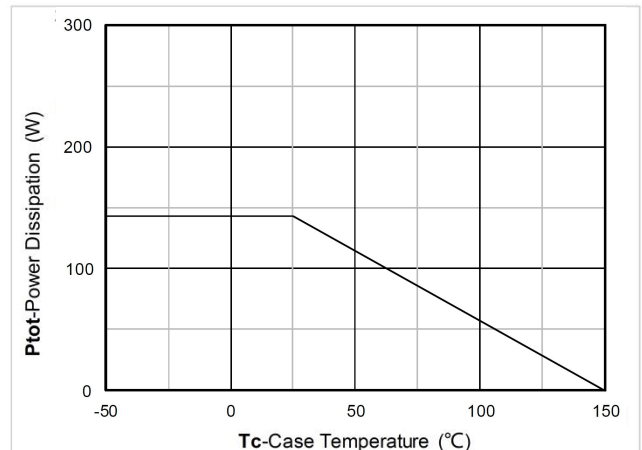
Normalized breakdown voltage



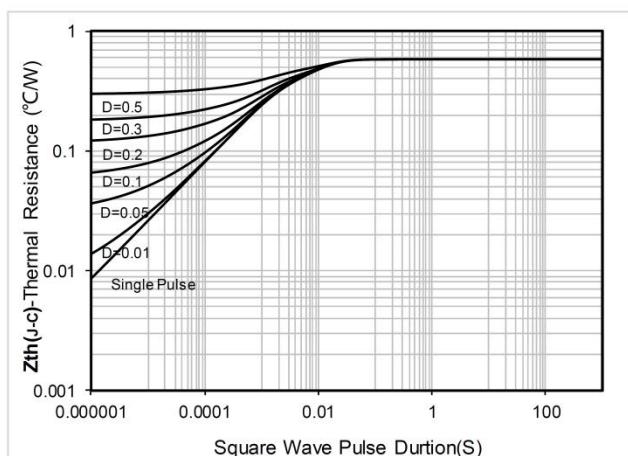
Normalized Threshold voltage



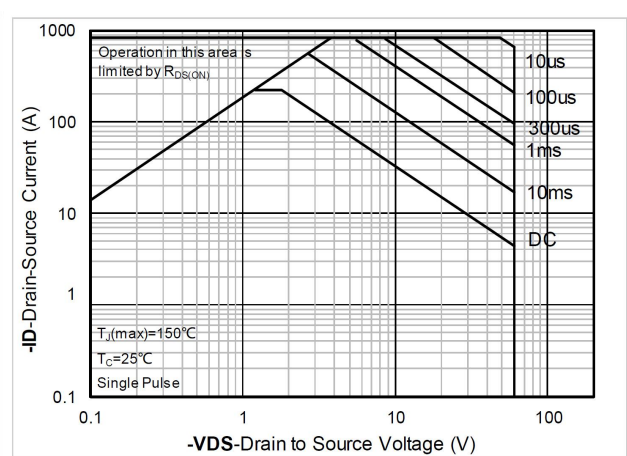
Current dissipation



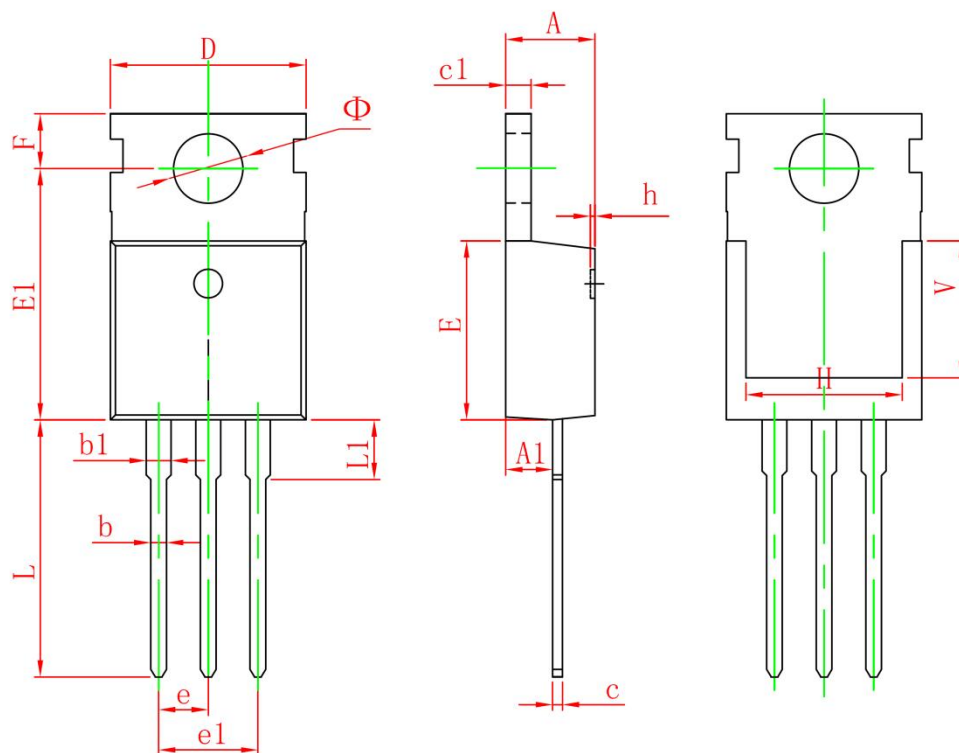
Power dissipation



Maximum Transient Thermal Impedance



Safe Operation Area

TO-220-3L 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