

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
-60V	3.1mΩ@-10V	-220A



合肥矽普半导体

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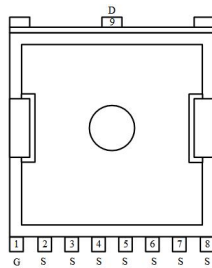
Feature

- Low Gate Charge and Rdson
- Low Reverse transfer capacitance
- Advanced Split Gate Trench Technology
- 100% Single Pulse avalanche energy Test

Applications

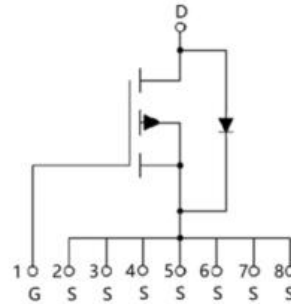
- Power switching application
- DC/DC Converter
- Power Management

Package

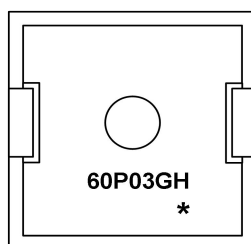


TOLL

Circuit diagram



Marking



60P03GH :Device Code
* :Month Code

Order Information

Device	Package	Unit/Tape
SP60P03GHTO	TOLL	2000

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

Parameter	Symbol	Rating	Units
Drain-Source Voltage	V_{DS}	-60	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current1 (Tc=25°C)	I_D	-220	A
Continuous Drain Current1 (Tc=100°C)	I_D	-148	A
Pulsed Drain Current	I_{DM}	-880	A
Single Pulse Avalanche Energy ¹	E_{AS}	1936	mJ
Power Dissipation (Tc=25°C)	P_D	184	W
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	0.68	°C/W
Storage Temperature Range	T_{STG}	-55 to 150	°C
Operating Junction Temperature Range	T_J	-55 to 150	°C

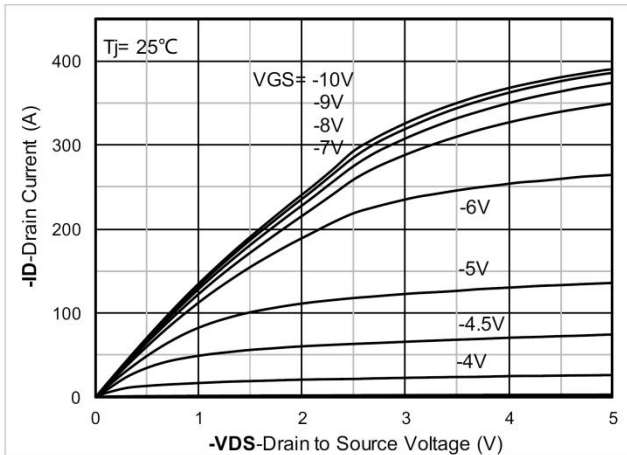
Electrical characteristics (Ta=25°C, unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	VGS=0V , ID= -250uA	-60	-68	-	V
Drain-Source Leakage Current	IDSS	VDS= -48V , 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	-1.5	-2.5	-3.5	V
Static Drain-Source On-Resistance ²	RDS(ON)	VGS= -10V , ID= -70A	-	3.1	3.9	mΩ
Dynamic Characteristics						
Input Capacitance	Ciss	VGS=0V, VDS= -20V,F=1MHz	-	8364	-	pF
Output Capacitance	Coss		-	1517	-	
Reverse Transfer Capacitance	Crss		-	110	-	
Total Gate Charge	Qg	VDS= -30V, ID= -70A, VGS= -10V	-	82	-	nC
Gate-Source Charge	Qgs		-	26	-	
Gate-Drain Charge	Qgd		-	18	-	
Switching Characteristics						
Turn-On Delay Time	Td(on)	VDD= -20V, ID= -70A, VGS= -10V, RG=2.6Ω	-	20	-	nS
Rise Time	Tr		-	58	-	
Turn-Off Delay Time	Td(off)		-	145	-	
Fall Time	Tf		-	168	-	
Source-Drain Diode Characteristics						
Diode Forward Voltage	VSD	VGS=0V , IS= -100A , TJ=25℃	-	-	-1.2	V
Maximum Body-Diode Continuous Current	IS		-	-	140	A
Body Diode Reverse Recovery Time	Trr	IS=-50A, di/dt=100A/us, TJ=25℃	-	65	-	nS
Body Diode Reverse Recovery Charge	Qrr		-	116	-	nC

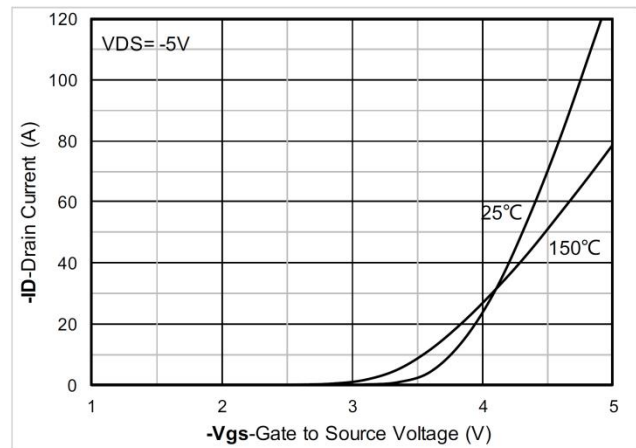
Note :

- The test condition is $V_{DD}=-30V$, $V_{GS}=-10V$, $L=0.5mH$, $R_G=25\Omega$;

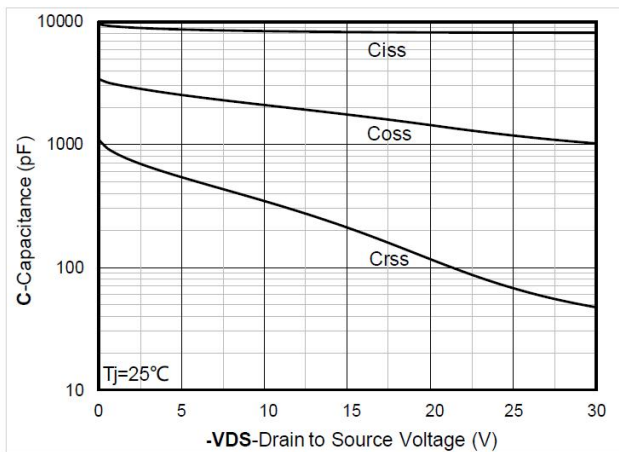
Typical Characteristics



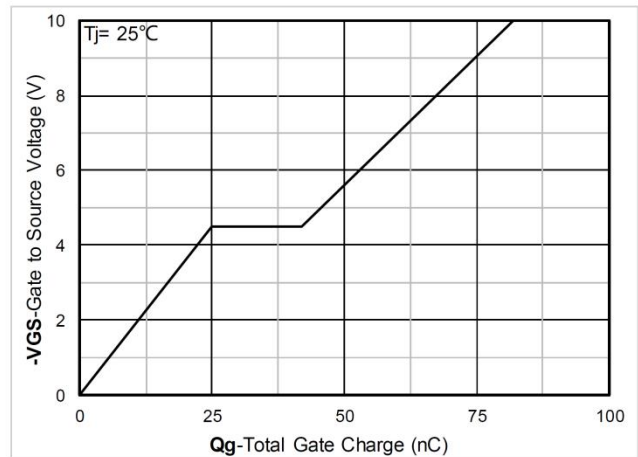
Output Characteristics



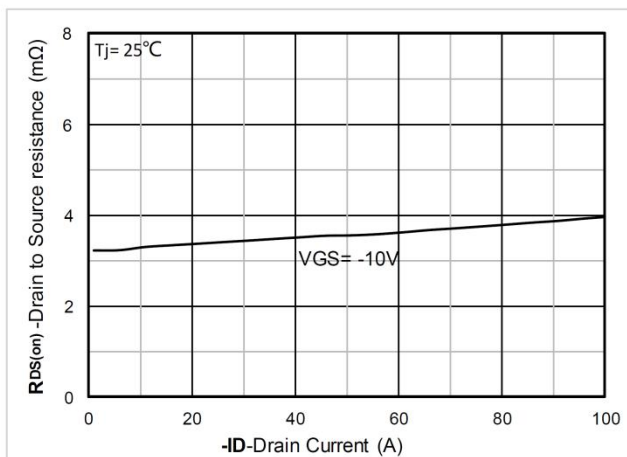
Transfer Characteristics



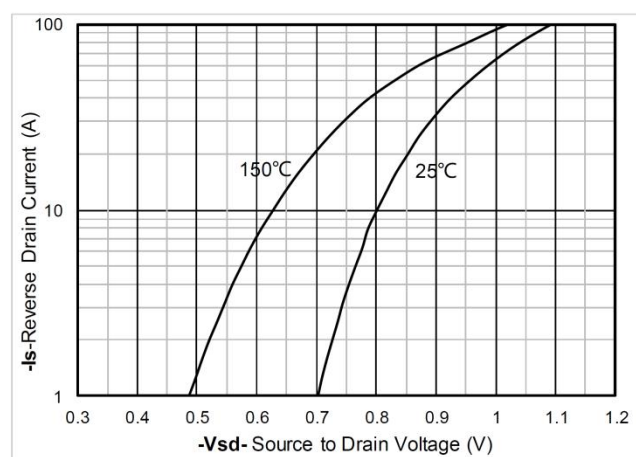
Capacitance Characteristics



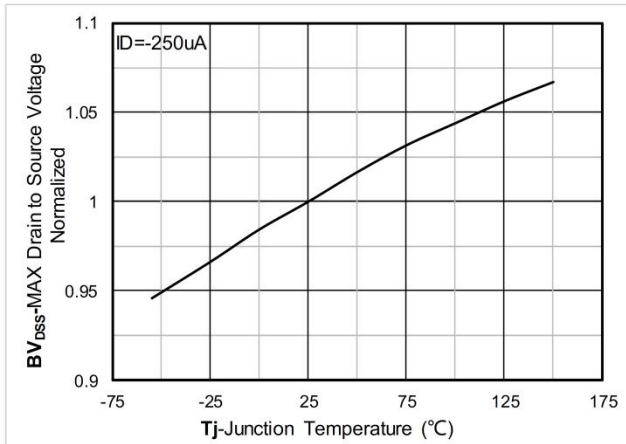
Gate Charge



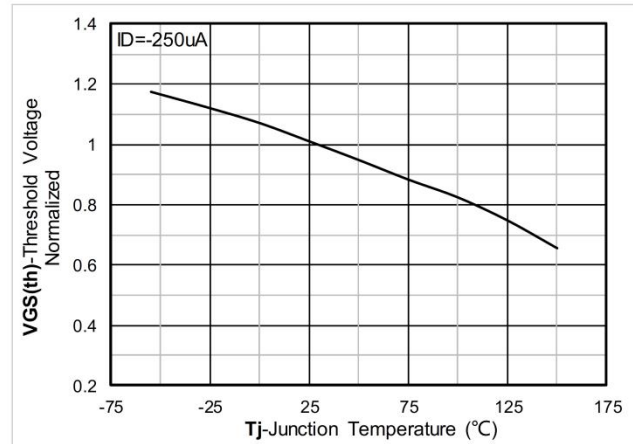
$R_{DS(on)}$ VS Drain Current



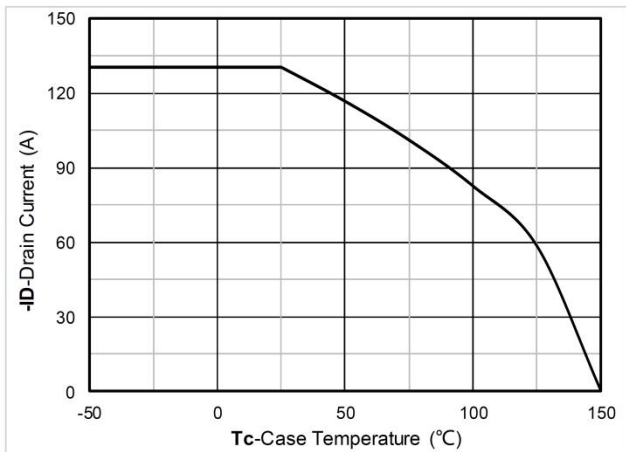
Forward characteristics of reverse diode



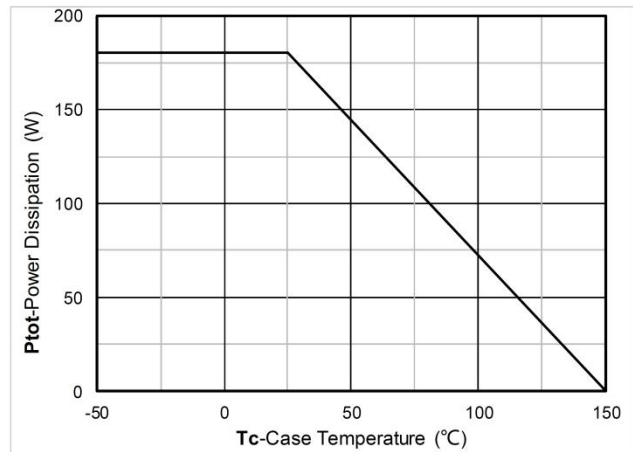
Normalized breakdown voltage



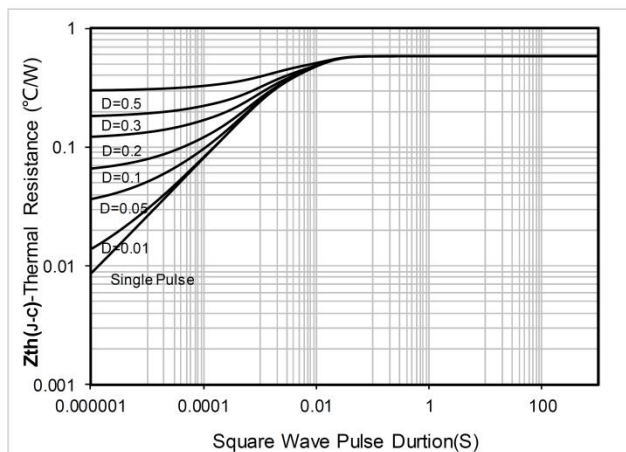
Normalized Threshold voltage



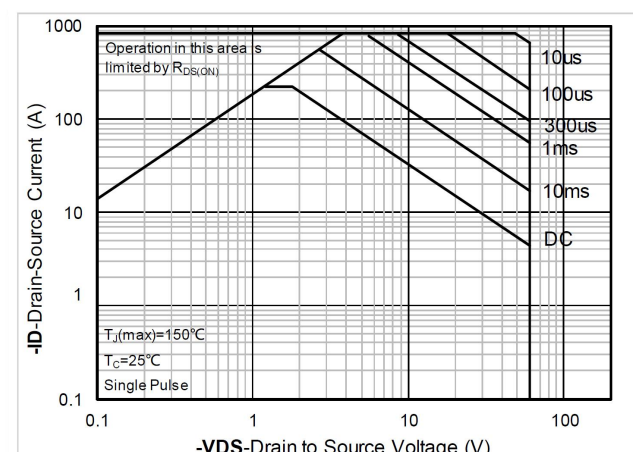
Current dissipation



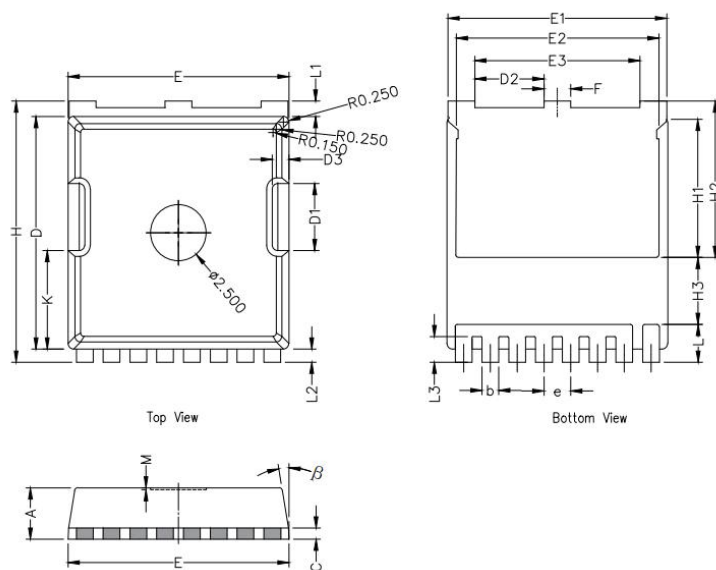
Power dissipation



Maximum Transient Thermal Impedance



Safe Operation Area

TOLL Package Information


Symbol	Dimensions In Millimeters		
	Min.	Nom.	Max.
A	2.20	2.30	2.40
b	0.65	0.75	0.85
C	0.508 REF		
D	10.25	10.40	10.55
D1	2.85	3.00	3.15
E	9.75	9.90	10.05
E1	9.65	9.80	9.95
E2	8.95	9.10	9.25
E3	7.25	7.40	7.55
e	1.20 BSC		
F	1.05	1.20	1.35
H	11.55	11.70	11.85
H1	6.03	6.18	6.33
H2	6.85	7.00	7.15
H3	3.00 BSC		
L	1.55	1.70	1.85
L1	0.55	0.7	0.85
L2	0.45	0.6	0.75
M	0.08 REF.		
β	8°	10°	12°
K	4.25	4.40	4.55