

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
900V	$1.7\Omega@10V$	0.5A



合肥矽普半导体

Siliup Semiconductor Technology Co., Ltd

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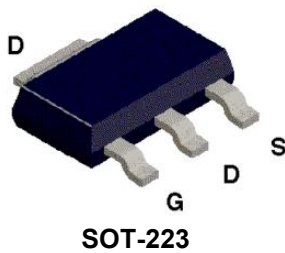
Feature

- Low On-Resistance
- Fast Switching Speed
- Ultra-fast Body Diode.
- Extremely Low Losses Due to Very Low FOM
 $R_{ds(on)} \cdot Q_g$ and E_{oss} .
- Very High Commutation Ruggedness.

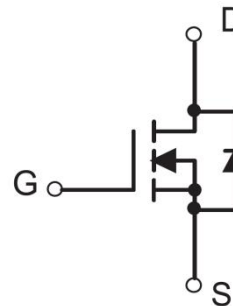
Application

- DC-AC Inverters
- PC power.
- Telecom/Sever.
- Solar Invertor.

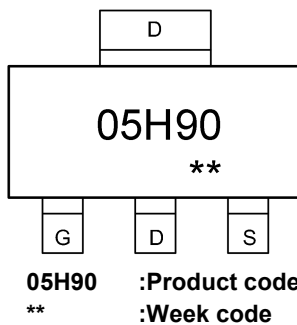
Package



Circuit diagram



Marking



Order Information

Device	Package	Unit/Tape
SP05H90TC	SOT-223	4000

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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	900	V
Gate-Source Voltage	V_{GS}	± 30	V
Continuous Drain Current	I_D	0.5	A
Pulsed Drain Current	I_{DM}	2	A
Single Pulse Avalanche Energy ¹	E_{AS}	7.2	mJ
Power Dissipation	P_D	4.2	W
Thermal Resistance Junction-to-Ambient	$R_{\theta Ja}$	29.8	°C/W
Storage Temperature Range	T_{STG}	-55~ +150	°C
Operating Junction Temperature Range	T_J	-55~ +150	°C

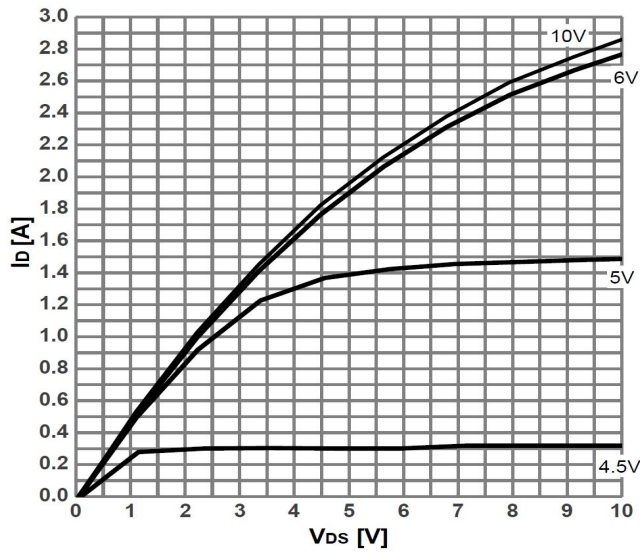
Electrical characteristics (T_A=25 °C, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D =250μA	900	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =900V,V _{GS} = 0V	-	-	1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} =±30V, V _{DS} = 0V	-	-	±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	2.5	3.5	4.5	V
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =10V, I _D =0.2A	-	1.7	2.1	Ω
Dynamic characteristics						
Input Capacitance	C _{iss}	V _{DS} =15V,V _{GS} =0V,f =1MHz	-	382	-	pF
Output Capacitance	C _{oss}		-	18	-	
Reverse Transfer Capacitance	C _{rss}		-	2.5	-	
Total Gate Charge	Q _g	V _{DS} =15V,V _{GS} =10V,I _D =5.6A	-	15	-	nC
Gate-Source Charge	Q _{gs}		-	1.4	-	
Gate-Drain Charge	Q _{gd}		-	13	-	
Switching Characteristics						
Turn-On Delay Time	t _{d(on)}	V _{GS} =10V,V _{DD} =15V,I _D =1.5A R _L =2.6Ω,R _{GEN} =3Ω	-	78	-	nS
Turn-On Rise Time	t _r		-	19	-	
Turn-Off Delay Time	t _{d(off)}		-	28	-	
Turn-Off Fall Time	t _f		-	31	-	
Source-Drain Diode characteristics						
Body Diode Voltage	V _{SD}	I _S =1A,V _{GS} =0V	-	-	1.2	V
Maximum Body-Diode Continuous Current	I _S		-	-	0.5	A
Reverse recover time	T _{rr}	I _S =0.3A, di/dt=100A/us,	-	185	-	nS
Reverse recovery charge	Q _{rr}	T _J =25℃	-	0.85	-	uC

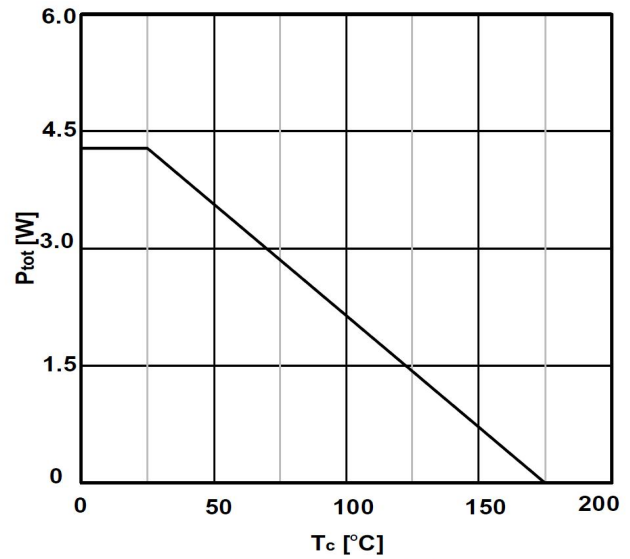
Note :

1. The test condition is $V_{DD} = 50V, V_{GS} = 10V, L = 10mH, R_G = 25\Omega$

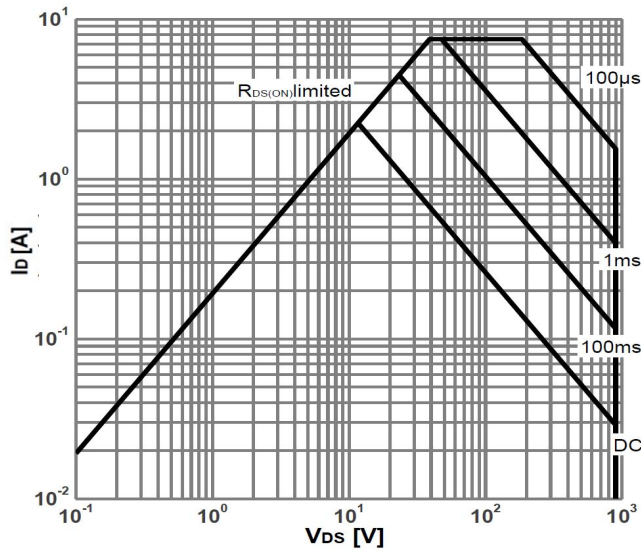
Typical Characteristics



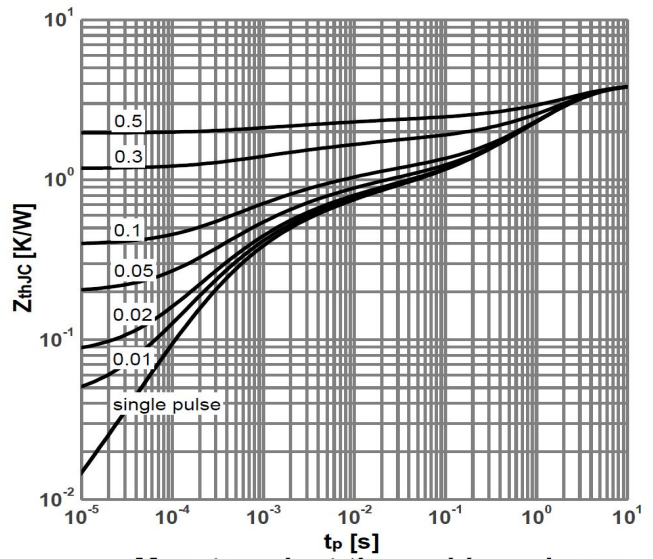
Output characteristics



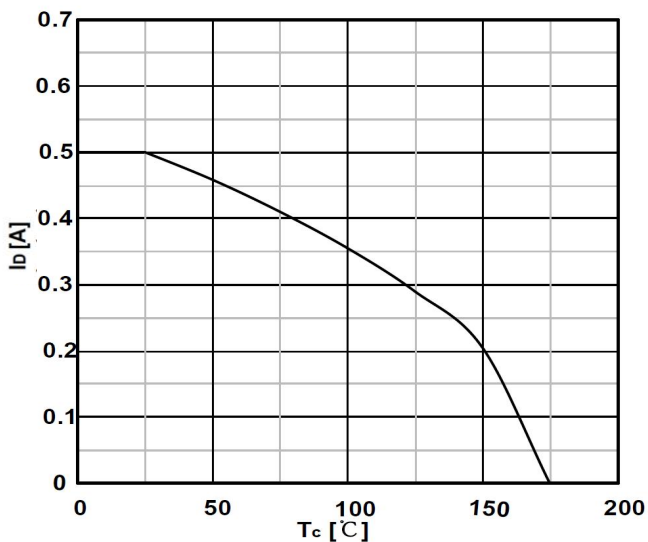
Power dissipation



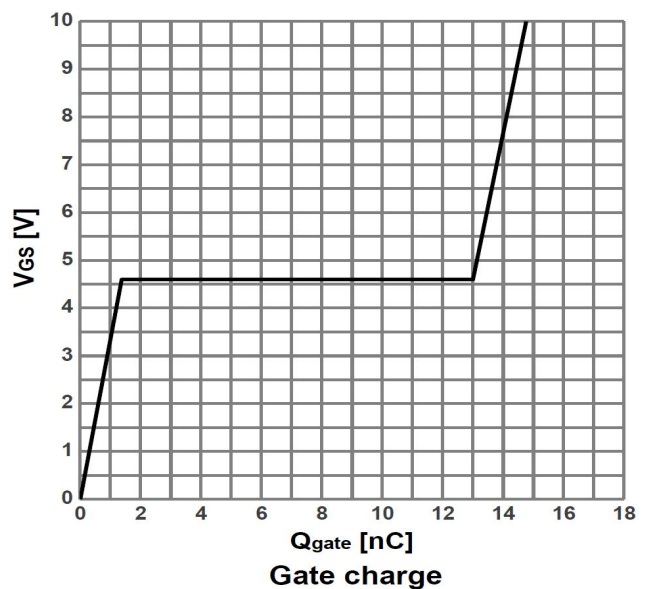
Safe operating area



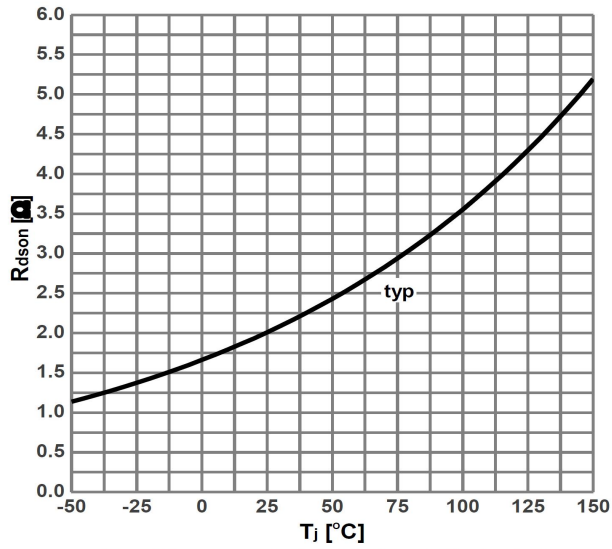
Max. transient thermal impedance



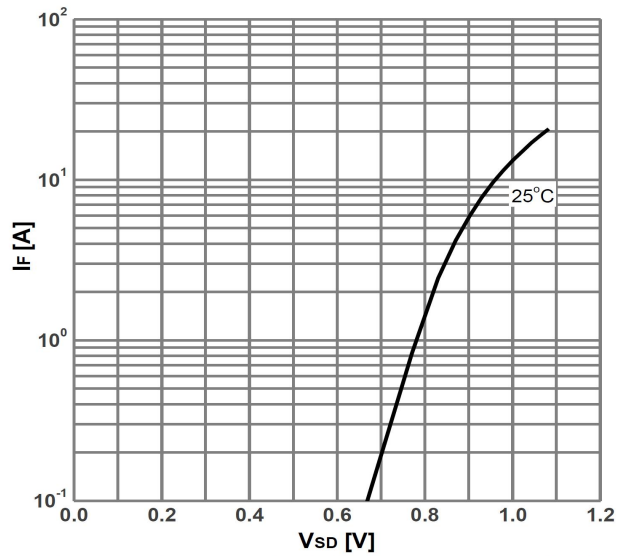
Current dissipation



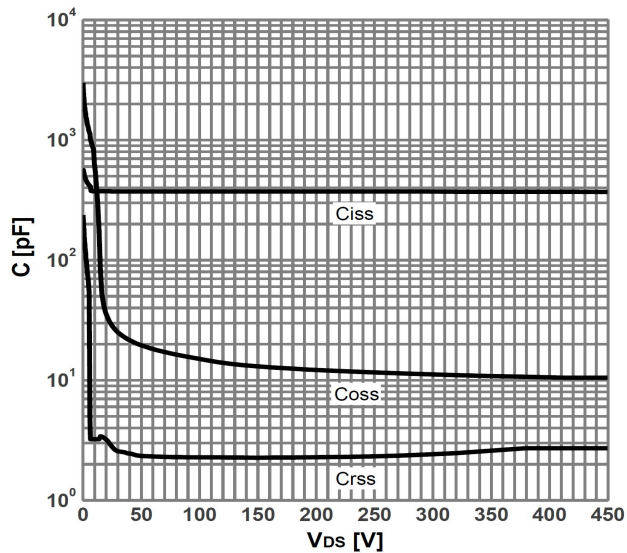
Gate charge



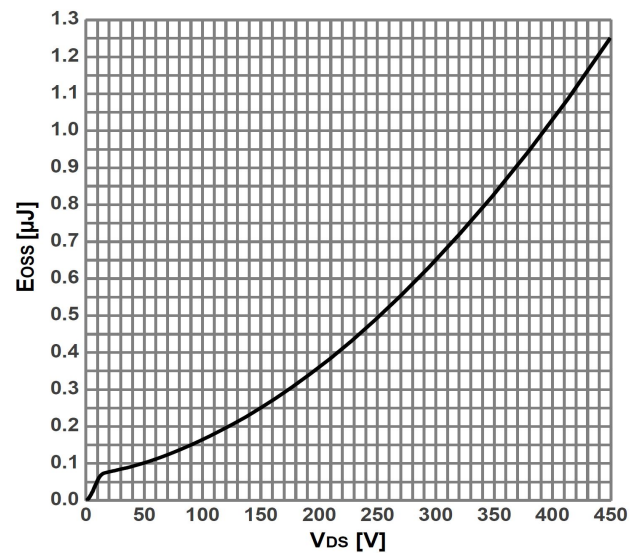
Drain-source on-state resistance



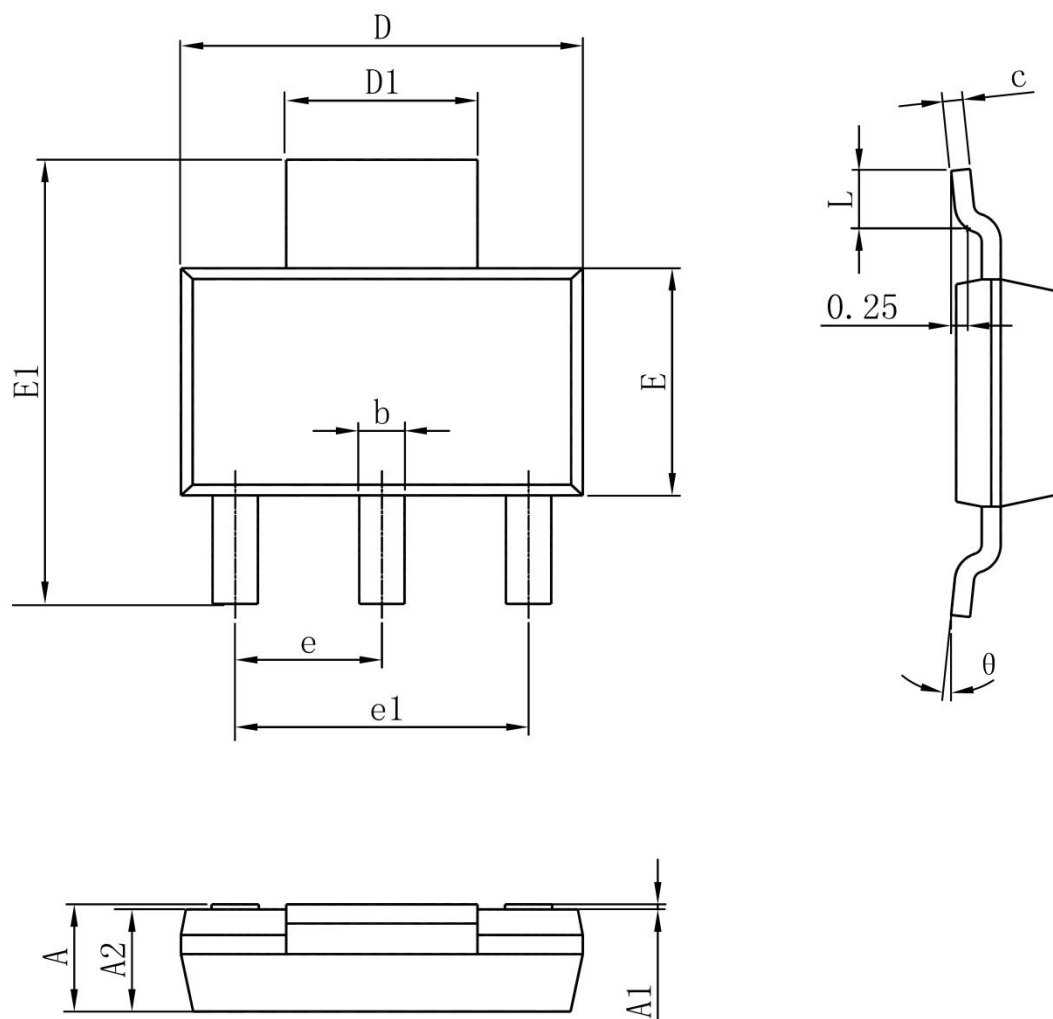
Forward characteristics of reverse diode



Capacitances



Coss stored energy

SOT-223 Package Information


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.520	1.800	0.060	0.071
A1	0.000	0.100	0.000	0.004
A2	1.500	1.700	0.059	0.067
b	0.660	0.820	0.026	0.032
c	0.250	0.350	0.010	0.014
D	6.200	6.400	0.244	0.252
D1	2.900	3.100	0.114	0.122
E	3.300	3.700	0.130	0.146
E1	6.830	7.070	0.269	0.278
e	2.300(BSC)		0.091(BSC)	
e1	4.500	4.700	0.177	0.185
L	0.900	1.150	0.035	0.045
θ	0°	10°	0°	10°