



SPC1016

N & P Pair Enhancement Mode MOSFET

DESCRIPTION

The SPC1016 is the Dual P-Channel enhancement mode power field effect transistors are produced using high cell density , DMOS trench technology. This high density process is especially tailored to minimize on-state resistance and provide superior switching performance. These devices are particularly suited for low voltage applications such as notebook computer power management and other battery powered circuits where high-side switching , low in-line power loss, and resistance to transients are needed.

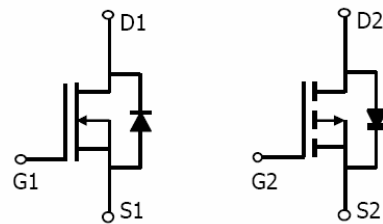
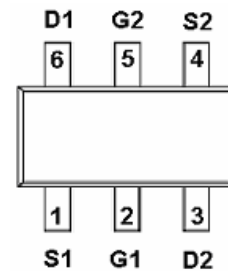
APPLICATIONS

- Power Management in Note book
- Portable Equipment
- Battery Powered System
- DC/DC Converter
- Load Switch
- DSC
- LCD Display inverter

FEATURES

- ◆ N-Channel
 - 20V/0.65A, $R_{DS(ON)}=380m\Omega@V_{GS}=4.5V$
 - 20V/0.55A, $R_{DS(ON)}=450m\Omega@V_{GS}=2.5V$
 - 20V/0.45A, $R_{DS(ON)}=800m\Omega@V_{GS}=1.8V$
- ◆ P-Channel
 - 20V/0.45A, $R_{DS(ON)}=0.52\Omega@V_{GS}=-4.5V$
 - 20V/0.35A, $R_{DS(ON)}=0.70\Omega@V_{GS}=-2.5V$
 - 20V/0.25A, $R_{DS(ON)}=0.95\Omega@V_{GS}=-1.8V$
- ◆ Super high density cell design for extremely low RDS (ON)
- ◆ Exceptional on-resistance and maximum DC current capability
- ◆ SOT-563 (SC-89-6L) package design

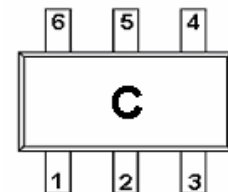
PIN CONFIGURATION(SOT-563 / SC-89-6L)



n-channel

p-channel

PART MARKING





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PIN DESCRIPTION

Pin	Symbol	Description
1	G1	Gate 1
2	S2	Source 2
3	G2	Gate 2
4	D2	Drain 2
5	S1	Source 1
6	D1	Drain1

ORDERING INFORMATION

Part Number	Package	Part Marking
SPC1016S56RG	SOT-563	C

※ Week Code : A ~ Z (1 ~ 26) ; a ~ z (27 ~ 52)

※ SPC1016S56RG : Tape Reel ; Pb – Free

ABSOLUTE MAXIMUM RATINGS

($T_A=25^{\circ}\text{C}$ Unless otherwise noted)

Parameter	Symbol	Typical		Unit	
		N-Channel	P-Channel		
Drain-Source Voltage	V_{DSS}	20	-20	V	
Gate –Source Voltage	V_{GSS}	± 12	± 12	V	
Continuous Drain Current($T_J=150^{\circ}\text{C}$)	I_D	$T_A=25^{\circ}\text{C}$	0.65	-0.45	A
		$T_A=80^{\circ}\text{C}$	0.45	-0.35	
Pulsed Drain Current	I_{DM}	1.0	-1.0	A	
Continuous Source Current(Diode Conduction)	I_S	0.3	-0.3	A	
Power Dissipation	P_D	$T_A=25^{\circ}\text{C}$	0.35		W
		$T_A=70^{\circ}\text{C}$	0.19		
Operating Junction Temperature	T_J	-55/150		$^{\circ}\text{C}$	
Storage Temperature Range	T_{STG}	-55/150		$^{\circ}\text{C}$	



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ELECTRICAL CHARACTERISTICS

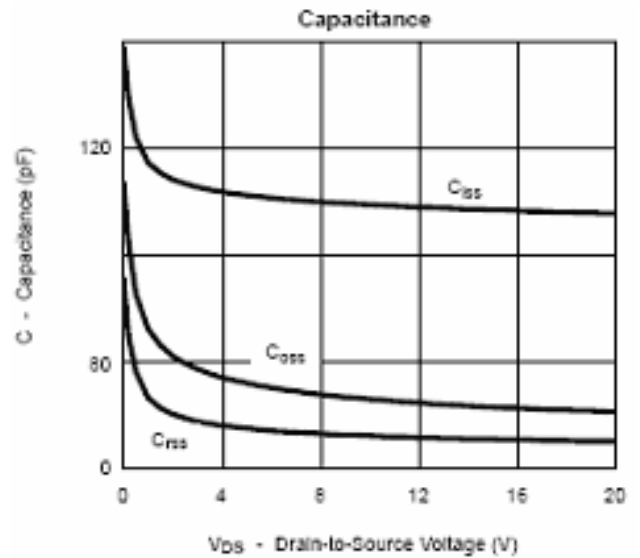
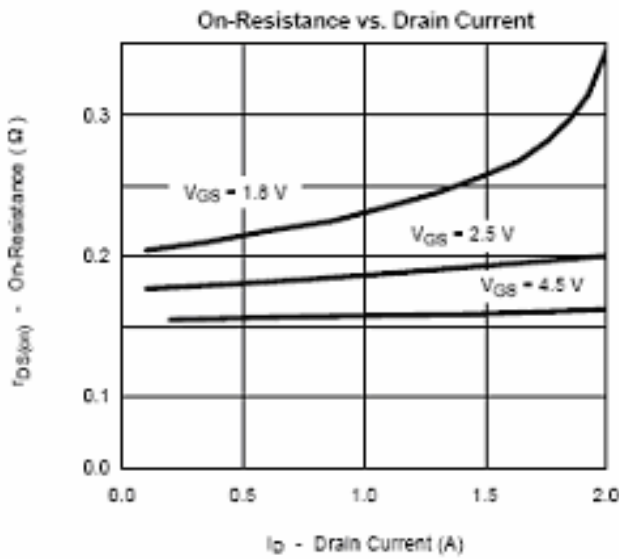
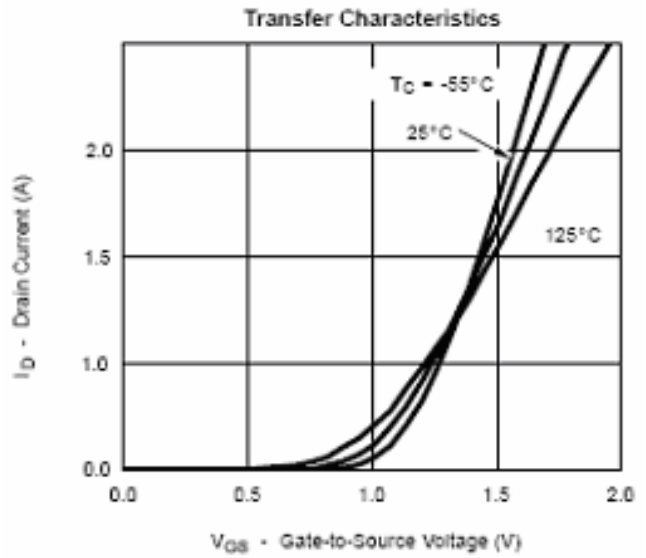
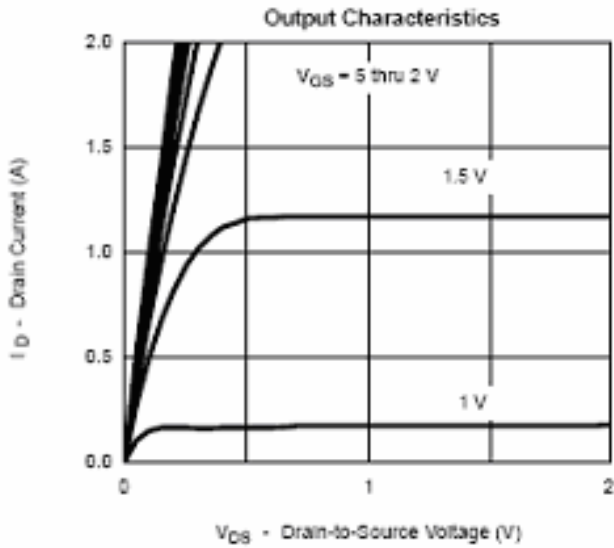
(TA=25°C Unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} =0V, I _D = 250uA	N-Ch	20		V
		V _{GS} =0V, I _D =-250uA	P-Ch	-20		
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250uA	N-Ch	0.35	1.0	
		V _{DS} =V _{GS} , I _D =-250uA	P-Ch	-0.35	-0.8	
Gate Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =±12V	N-Ch		±100	nA
		V _{DS} =0V, V _{GS} =±12V	P-Ch		±100	
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 20V, V _{GS} =0V	N-Ch		1	uA
		V _{DS} =-20V, V _{GS} =0V	P-Ch		-1	
		V _{DS} = 20V, V _{GS} =0V T _J =55°C	N-Ch		10	
		V _{DS} =-20V, V _{GS} =0V T _J =55°C	P-Ch		-10	
On-State Drain Current	I _{D(on)}	V _{DS} ≥ 4.5V, V _{GS} = 5V	N-Ch	0.7		A
		V _{DS} ≤ -4.5V, V _{GS} = -5V	P-Ch	-0.7		
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =4.5V, I _D =0.65A	N-Ch		0.26 0.38	Ω
		V _{GS} =-4.5V, I _D =-0.45A	P-Ch		0.42 0.52	
		V _{GS} =2.5V, I _D =0.55A	N-Ch		0.32 0.45	
		V _{GS} =-2.5V, I _D =-0.35A	P-Ch		0.58 0.70	
		V _{GS} =1.8V, I _D =0.45A	N-Ch		0.42 0.80	
		V _{GS} =-1.8V, I _D =-0.25A	P-Ch		0.75 0.95	
Forward Transconductance	g _{fs}	V _{DS} =10V, I _D =0.4A	N-Ch	1.0		S
		V _{DS} =-10V, I _D =-0.25A	P-Ch	0.4		
Diode Forward Voltage	V _{SD}	I _S = 0.15A, V _{GS} =0V	N-Ch	0.8	1.2	V
		I _S =-0.15A, V _{GS} =0V	P-Ch	-0.8	-1.2	
Dynamic						
Total Gate Charge	Q _g	N-Channel V _{DS} =10V, V _{GS} =4.5V, I _D ≐0.6A P-Channel V _{DS} =-10V, V _{GS} =-4.5V, I _D ≐-0.6A	N-Ch		1.2 1.5	nC
Gate-Source Charge	Q _{gs}		P-Ch		1.5 2.0	
			N-Ch		0.2	
Gate-Drain Charge	Q _{gd}		P-Ch		0.3	
			N-Ch		0.3	
Turn-On Time	td(on)		N-Channel		5 10	
	tr	V _{DD} =10V, R _L =10Ω, I _D ≐0.5A	P-Ch	5 10		
Turn-Off Time		td(off)	V _{GEN} =4.5V, R _G =6Ω	N-Ch	8 15	
	P-Channel		P-Ch	15 25		
	tf	V _{DD} =-10V, R _L =10Ω, I _D ≐-0.4A	N-Ch	10 18		
		V _{GEN} =-4.5V, R _G =6Ω	P-Ch	8 15		
			N-Ch	1.2 2.8		
			P-Ch	1.4 1.8		



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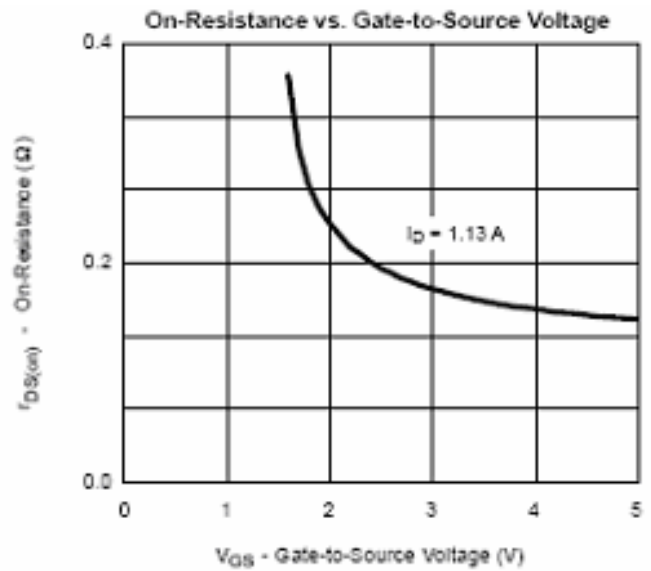
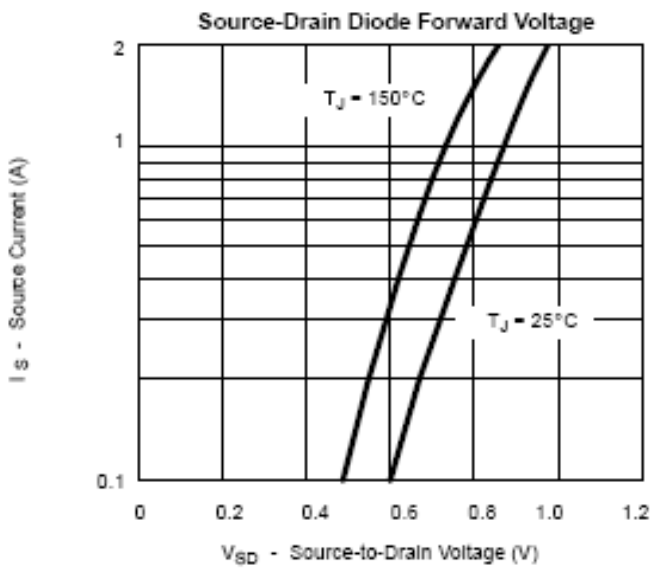
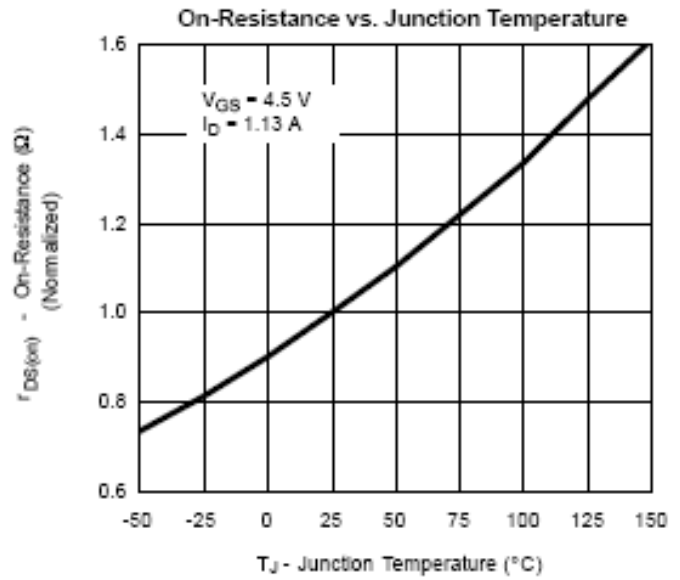
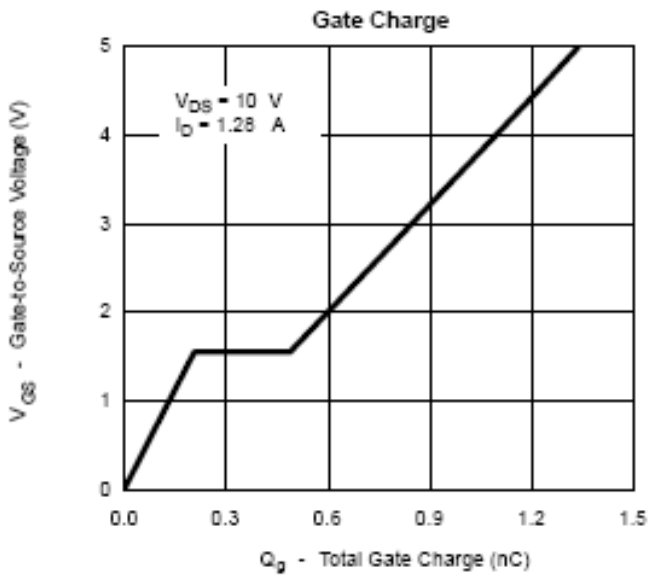
TYPICAL CHARACTERISTICS (N-Channel)





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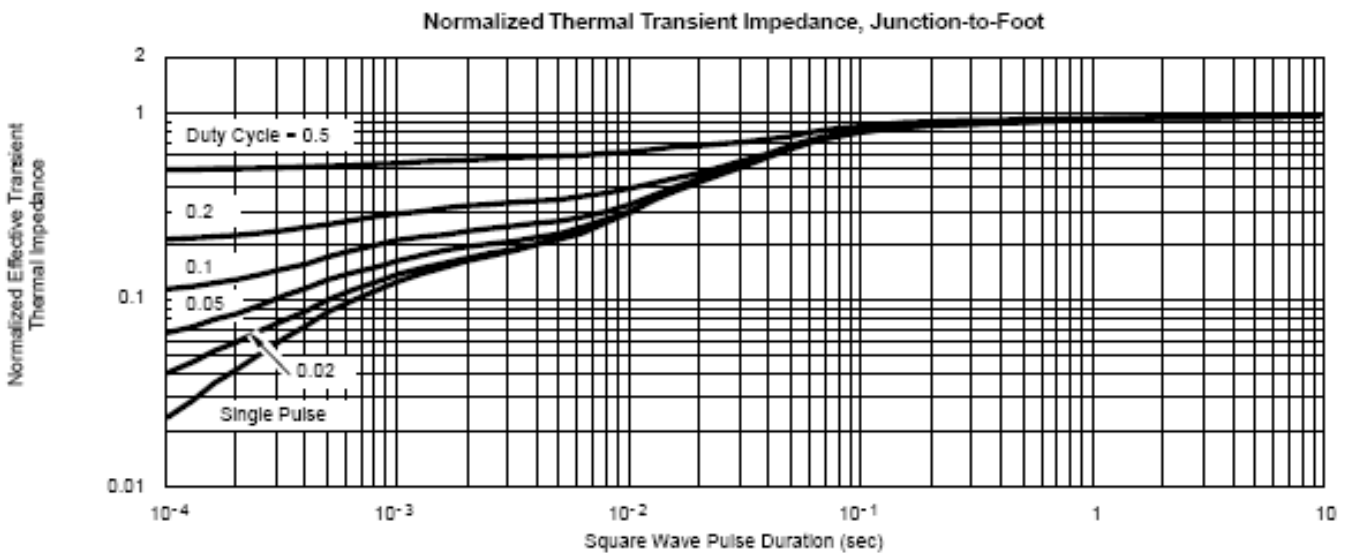
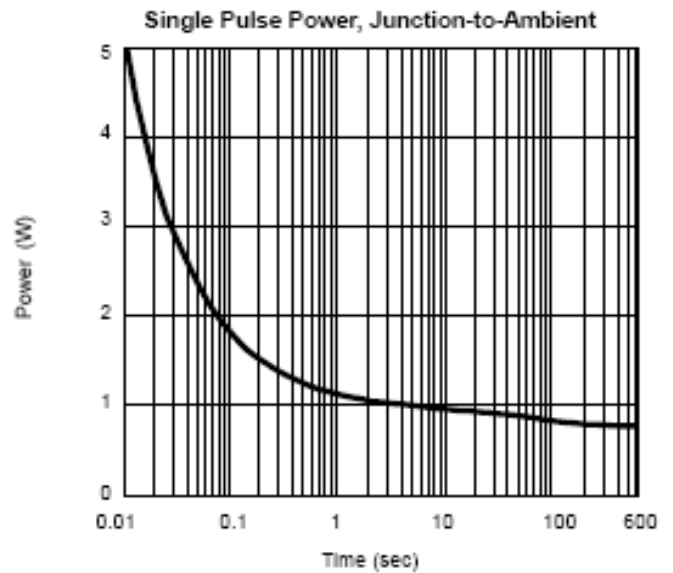
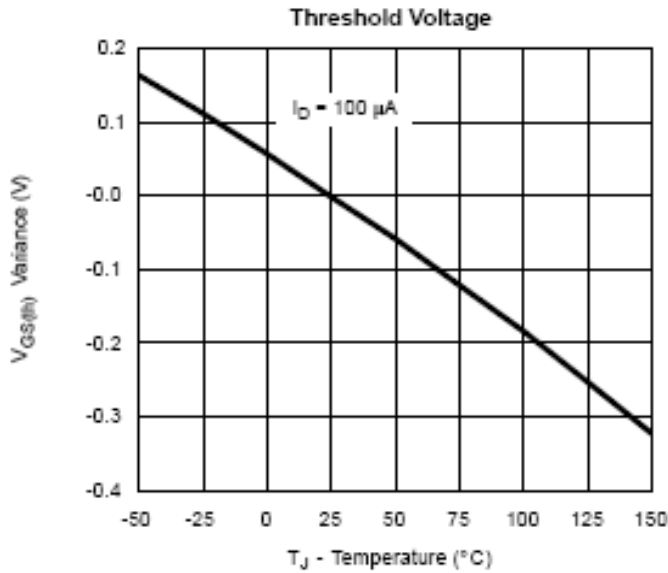
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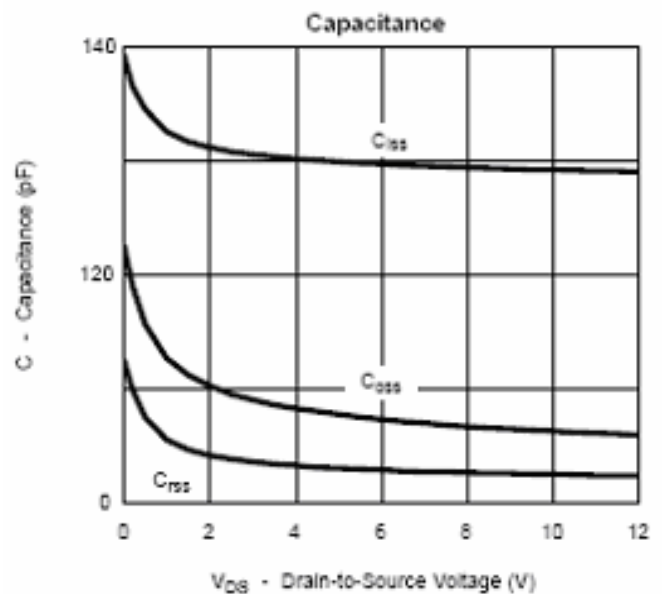
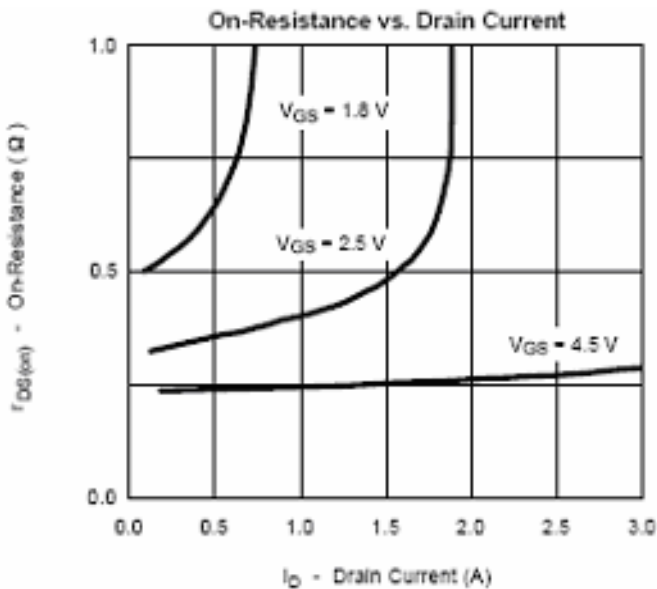
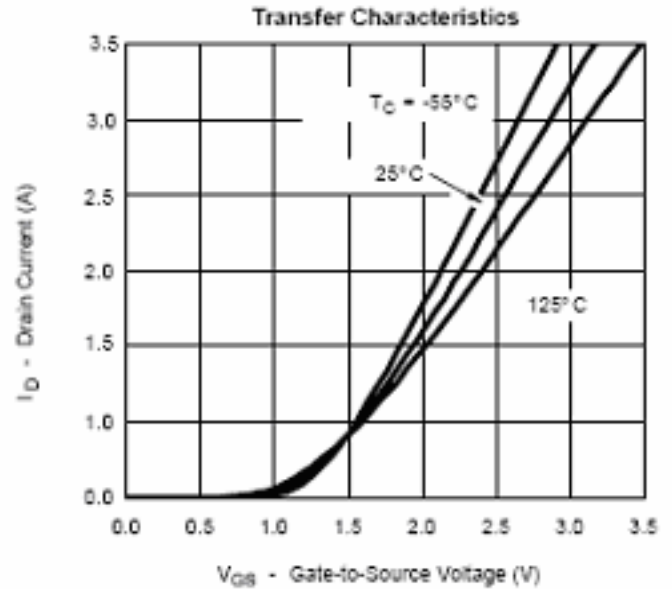
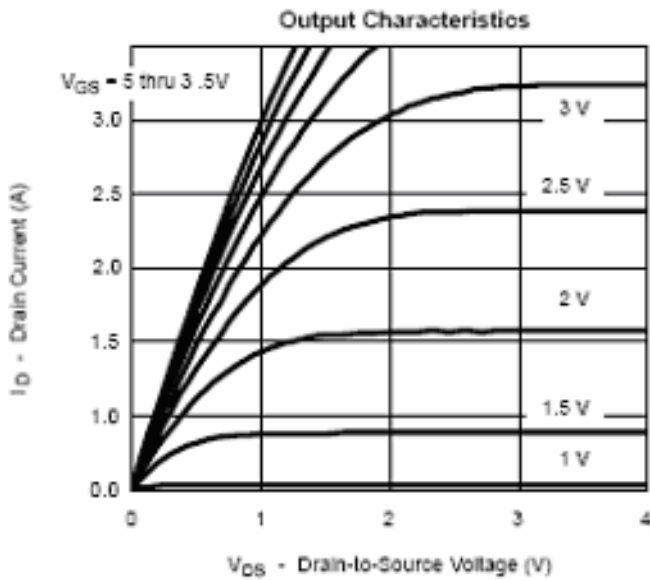




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TYPICAL CHARACTERISTICS (P-Channel)

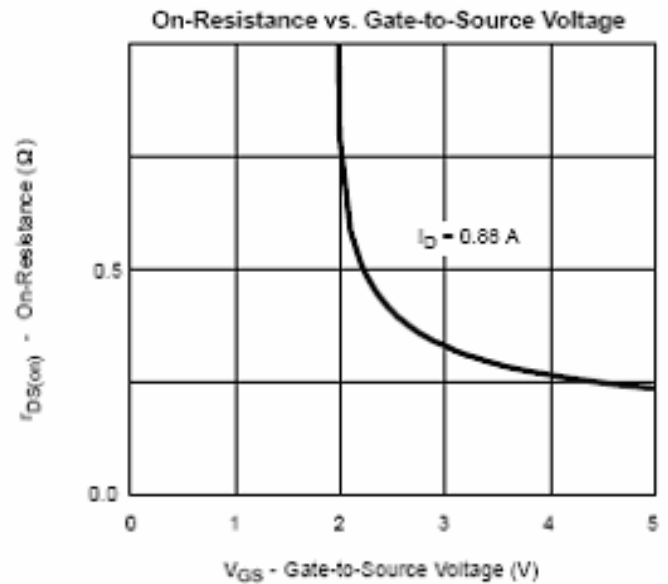
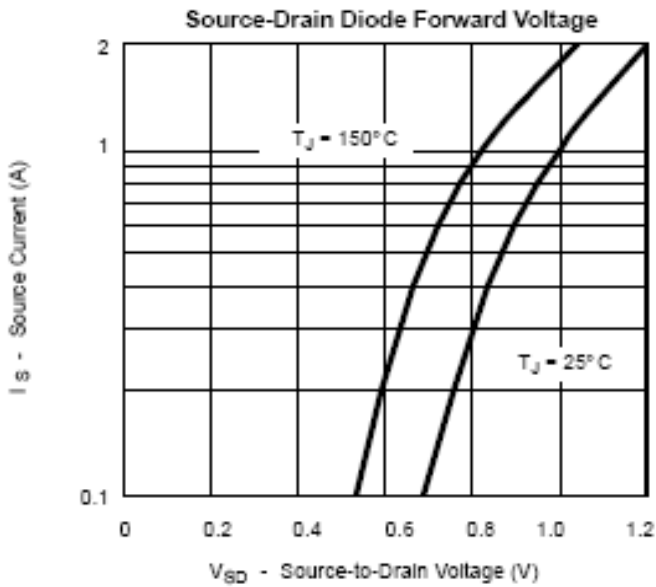
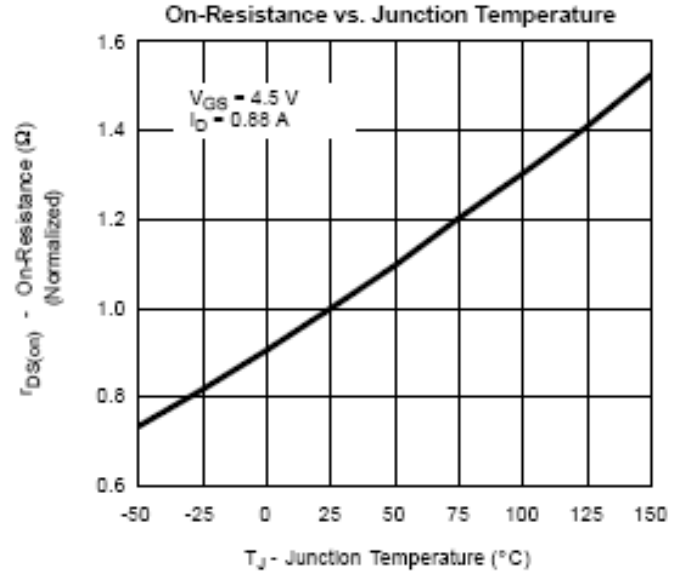
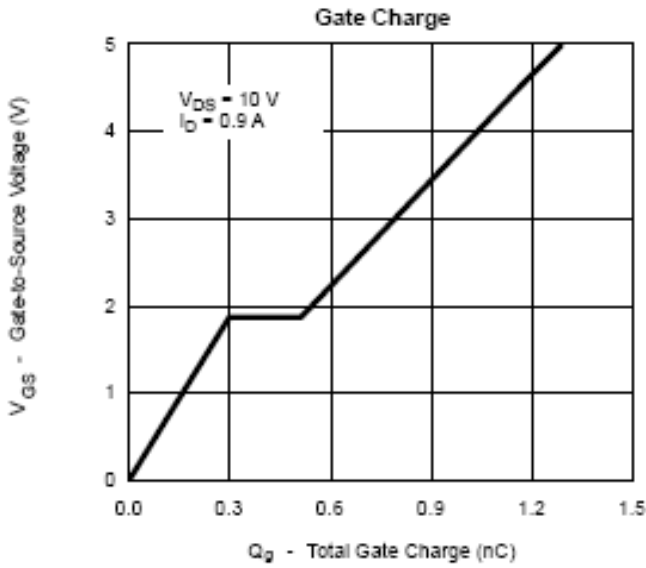




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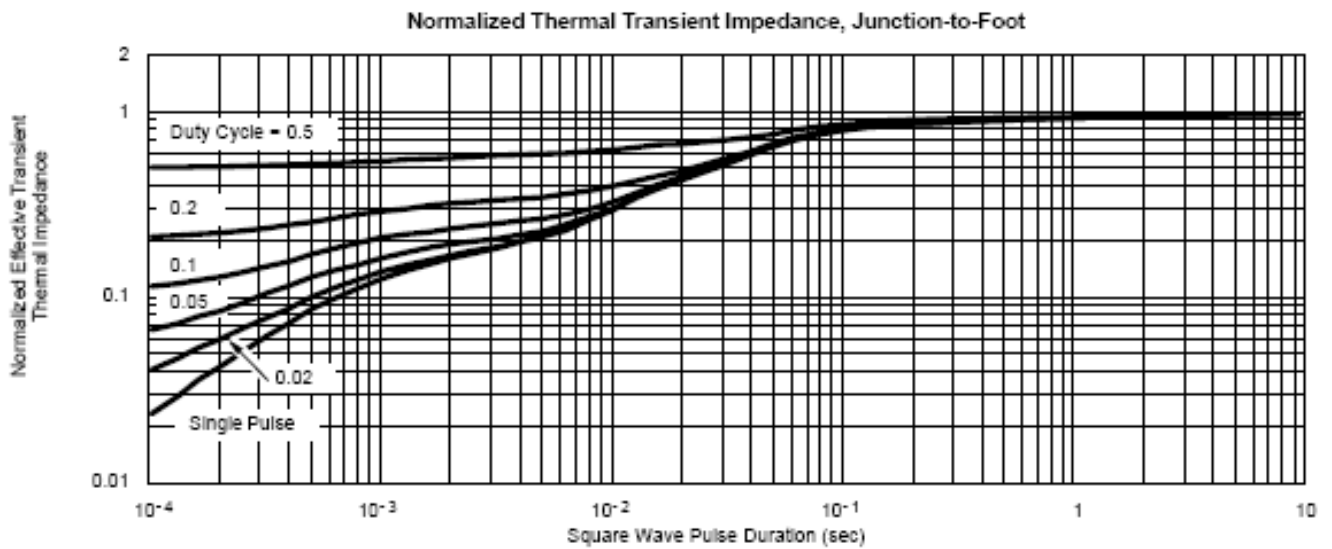
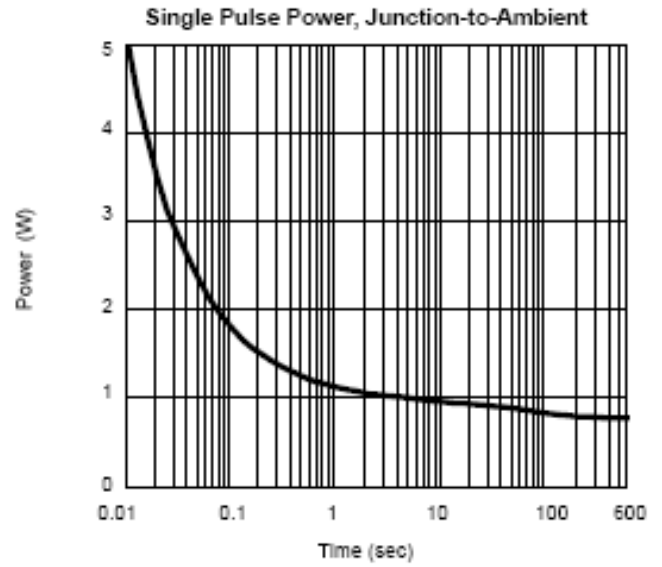
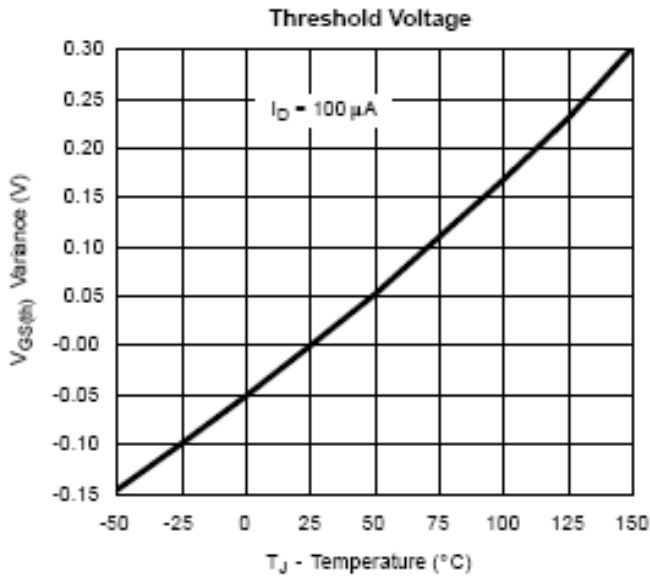
TYPICAL CHARACTERISTICS (P-Channel)





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TYPICAL CHARACTERISTICS (P-Channel)

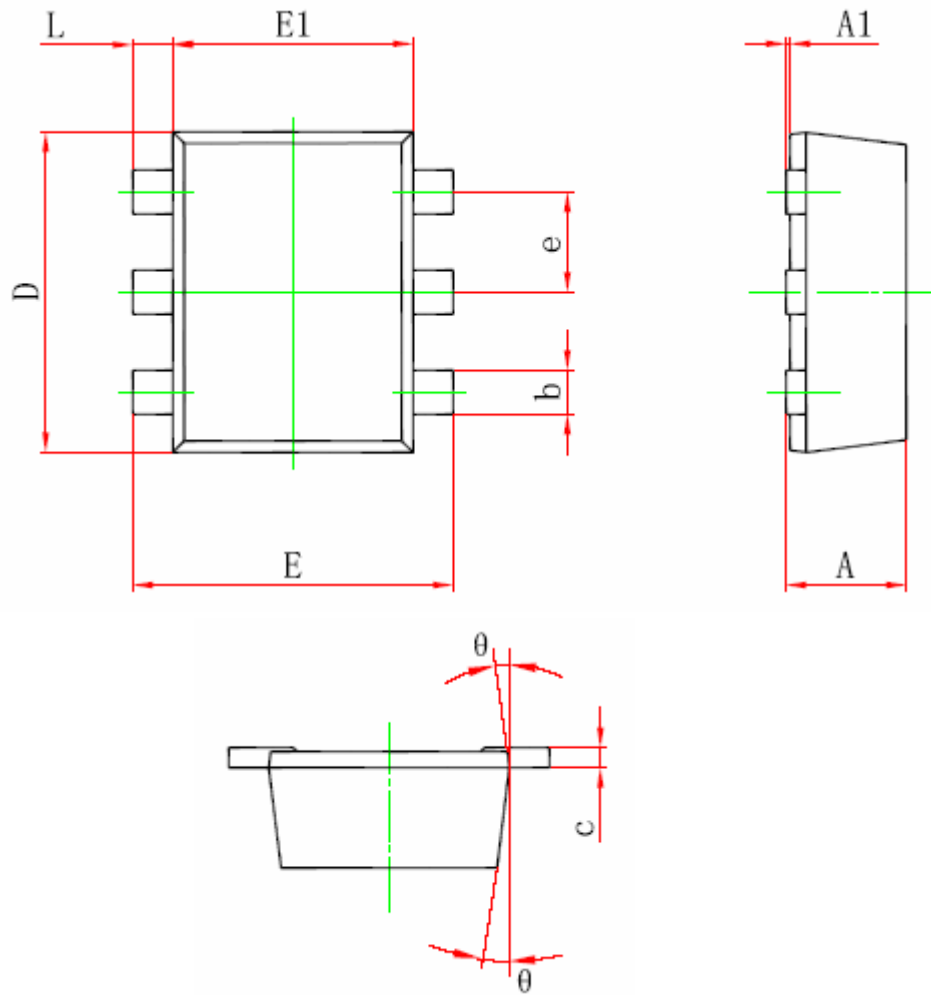




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SOT-563 PACKAGE OUTLINE



Symbol	Dimensions in Millimeters		Dimensions in Inches	
	Min.	Max.	Min.	Max.
A	0.525	0.600	0.021	0.024
A1	0.000	0.050	0.000	0.002
e	0.450	0.550	0.018	0.022
c	0.090	0.160	0.004	0.006
D	1.500	1.700	0.059	0.067
b	0.170	0.270	0.007	0.011
E1	1.100	1.300	0.043	0.051
E	1.500	1.700	0.059	0.067
L	0.100	0.300	0.004	0.012
θ	7° REF.		7° REF.	



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