



SPC6602

N & P Pair Enhancement Mode MOSFET

DESCRIPTION

The SPC6602 is the N- and 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.

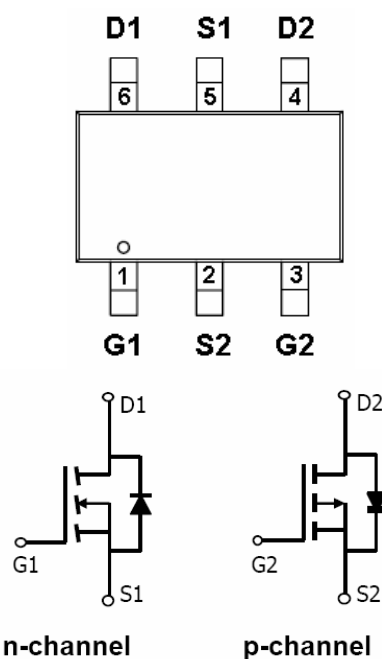
FEATURES

- ◆ N-Channel
 - 30V/2.8A, $R_{DS(ON)} = 60m\Omega @ V_{GS} = 10V$
 - 30V/2.3A, $R_{DS(ON)} = 80m\Omega @ V_{GS} = 4.5V$
- ◆ P-Channel
 - 30V/-2.8A, $R_{DS(ON)} = 105m\Omega @ V_{GS} = -10V$
 - 30V/-2.5A, $R_{DS(ON)} = 135m\Omega @ V_{GS} = -4.5V$
- ◆ Super high density cell design for extremely low $R_{DS(ON)}$
- ◆ Exceptional on-resistance and maximum DC current capability
- ◆ TSOP- 6P package design

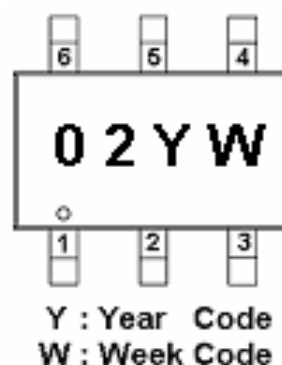
APPLICATIONS

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

PIN CONFIGURATION(TSOP- 6P)



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
SPC6602ST6RG	TSOP- 6P	02YW

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

※ SPC6602ST6RG : Tape Reel ; Pb – Free

ABSOLUTE MAXIMUM RATINGS

(TA=25°C Unless otherwise noted)

Parameter		Symbol	Typical		Unit
			N-Channel	P-Channel	
Drain-Source Voltage		V _{DSS}	30	-30	V
Gate –Source Voltage		V _{GSS}	±20	±20	V
Continuous Drain Current(T _J =150℃)	T _A =25℃	I _D	2.8	-2.8	A
	T _A =70℃		2.3	-2.1	
Pulsed Drain Current		I _{DM}	10	-8	A
Continuous Source Current(Diode Conduction)		I _S	1.25	-1.4	A
Power Dissipation	T _A =25℃	P _D	1.15		W
	T _A =70℃		0.75		
Operating Junction Temperature		T _J	-55/150		℃
Storage Temperature Range		T _{STG}	-55/150		℃
Thermal Resistance-Junction to Ambient	T ≤ 10sec	R _{θJA}	50	52	℃/W
	Steady State		90	90	



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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	30			V	
		V _{GS} =0V,I _D =-250uA	P-Ch	-30				
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} ,I _D =250uA	N-Ch	1		3		
		V _{DS} =V _{GS} ,I _D =-250uA	P-Ch	1		-3		
Gate Leakage Current	I _{GSS}	V _{DS} =0V,V _{GS} =±20V	N-Ch			±100	nA	
		V _{DS} =0V,V _{GS} =±20V	P-Ch			±100		
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 30V,V _{GS} =0V	N-Ch			1	uA	
		V _{DS} =-30V,V _{GS} =0V	P-Ch			-1		
		V _{DS} = 30V,V _{GS} =0V T _J =55°C	N-Ch			10		
		V _{DS} =-30V,V _{GS} =0V T _J =55°C	P-Ch			-10		
On-State Drain Current	I _{D(on)}	V _{DS} ≥ 5V,V _{GS} = 10V	N-Ch	6			A	
		V _{DS} ≤ -5V,V _{GS} =-10V	P-Ch	-6				
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} = 10V,I _D = 2.8A	N-Ch		0.043	0.060	Ω	
		V _{GS} =-10V,I _D =-2.8A	P-Ch		0.088	0.105		
		V _{GS} = 4.5V,I _D = 2.3A	N-Ch		0.056	0.080		
		V _{GS} =-4.5V,I _D =-2.5A	P-Ch		0.118	0.135		
Forward Transconductance	g _{fs}	V _{DS} =4.5V,I _D =2.8A	N-Ch		4.6		S	
		V _{DS} =-10V,I _D =-2.8A	P-Ch		4			
Diode Forward Voltage	V _{SD}	I _S = 1.25A,V _{GS} =0V	N-Ch		0.8	1.2	V	
		I _S =-1.2A,V _{GS} =0V	P-Ch		-0.8	-1.2		
Dynamic								
Total Gate Charge	Q _g	N-Channel V _{DS} =15 ,V _{GS} =4.5V , I _D ≡2.0A P-Channel V _{DS} =-15V ,V _{GS} =-4.5V , I _D ≡-2.0A	N-Ch		4.5	10	nC	
Gate-Source Charge	Q _{gs}		P-Ch		5.8	10		
			N-Ch		0.8			
Gate-Drain Charge	Q _{gd}		P-Ch		0.8			
			N-Ch		1.0			
			P-Ch		1.5			
Turn-On Time	td(on)	N-Channel V _{DD} =15 , R _L =10Ω V _{GEN} =10V , R _G =3Ω	N-Ch		8	20	nS	
	P-Ch			9	20			
	N-Ch			12	30			
	P-Ch			9	20			
Turn-Off Time	td(off)		P-Channel V _{DD} =-15V , R _L =15Ω V _{GEN} =-10V , R _G =3Ω	N-Ch		17		35
	P-Ch				18	35		
	tr			N-Ch		8		20
				P-Ch		6		20

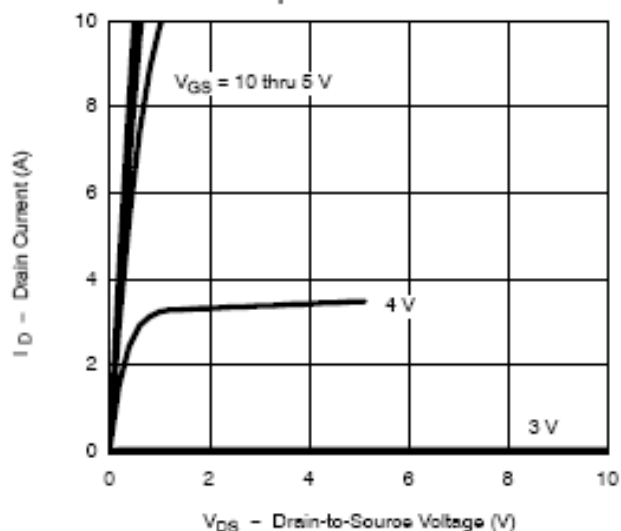


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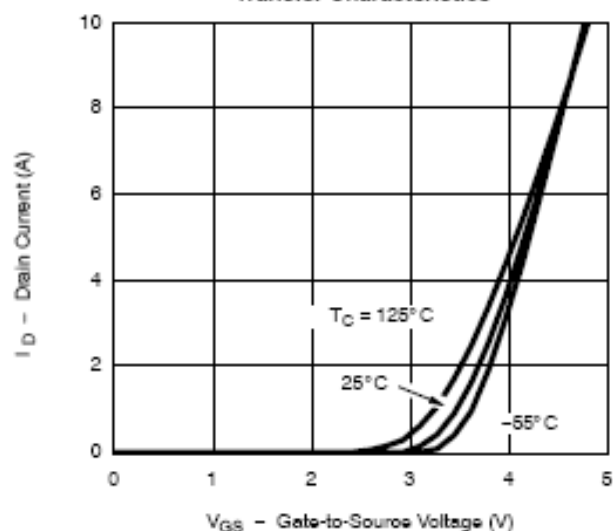
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TYPICAL CHARACTERISTICS (N-Channel)

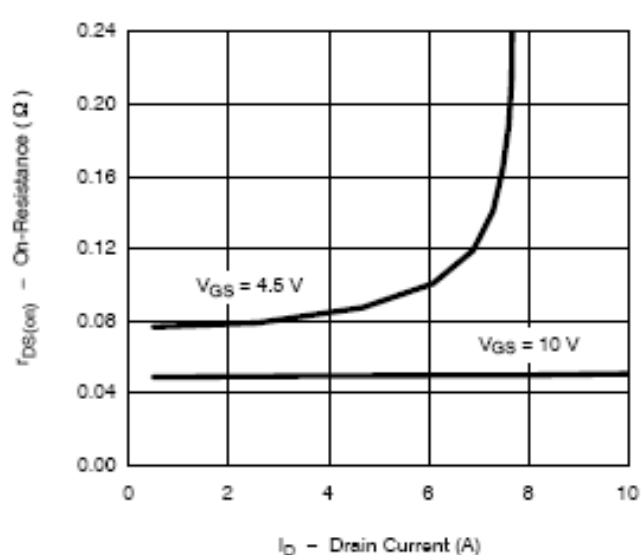
Output Characteristics



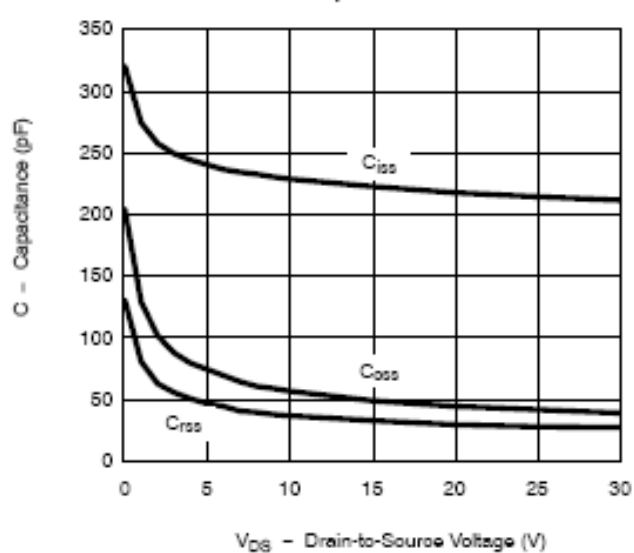
Transfer Characteristics



On-Resistance vs. Drain Current



Capacitance



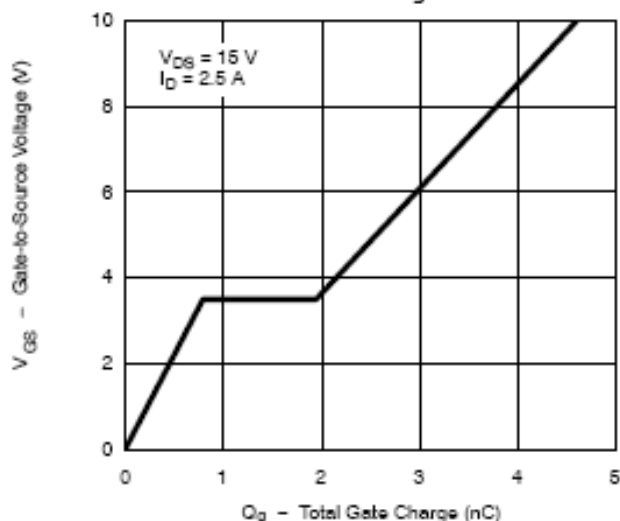


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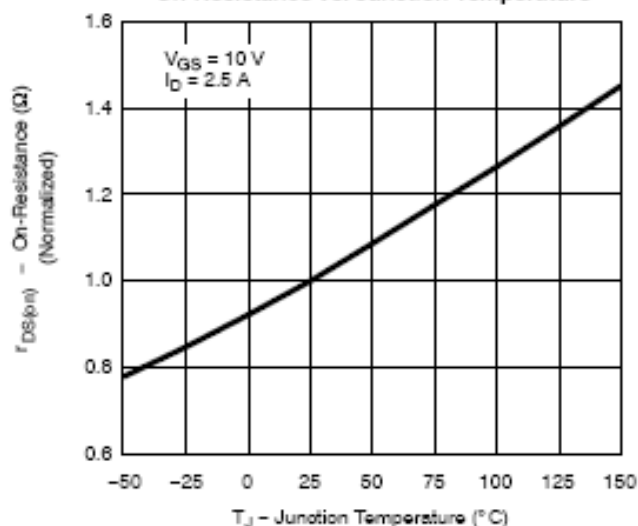
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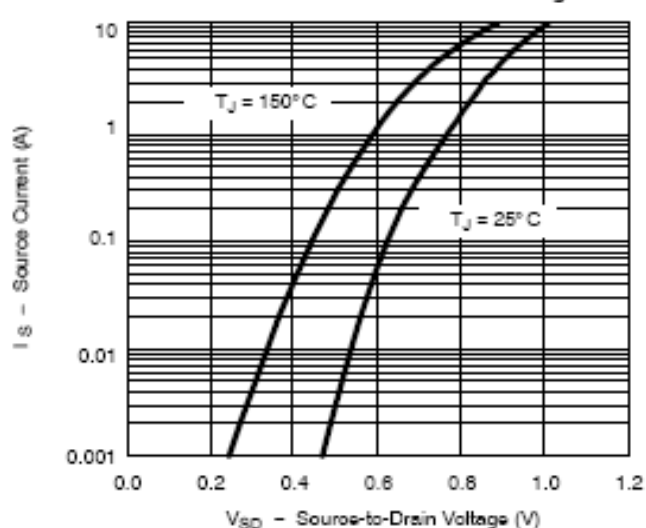
Gate Charge



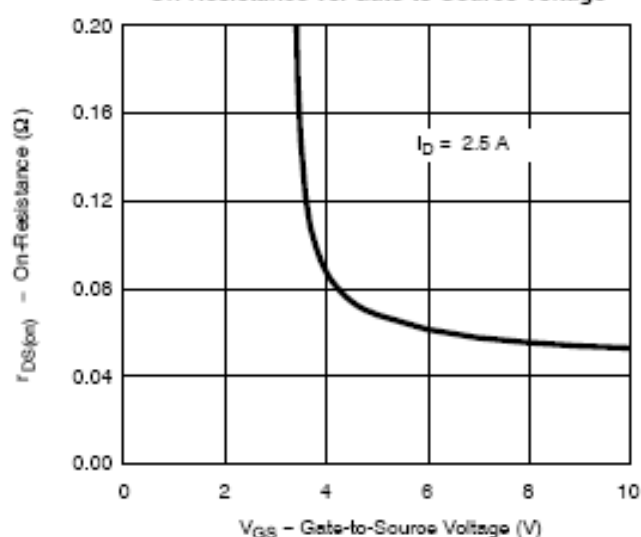
On-Resistance vs. Junction Temperature



Source-Drain Diode Forward Voltage



On-Resistance vs. Gate-to-Source Voltage

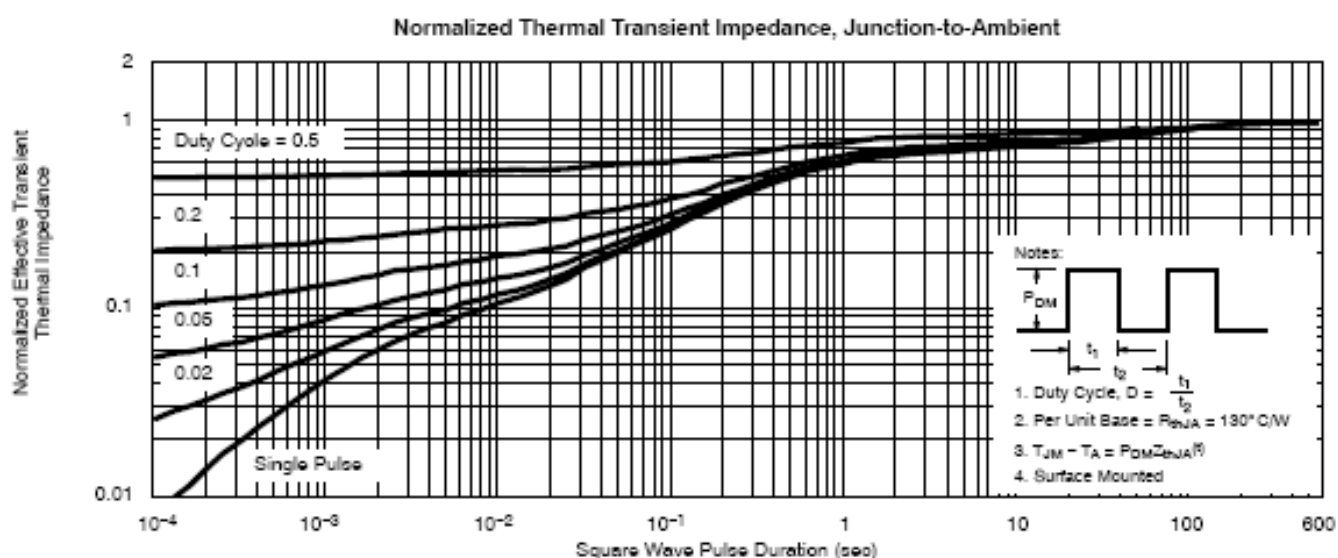
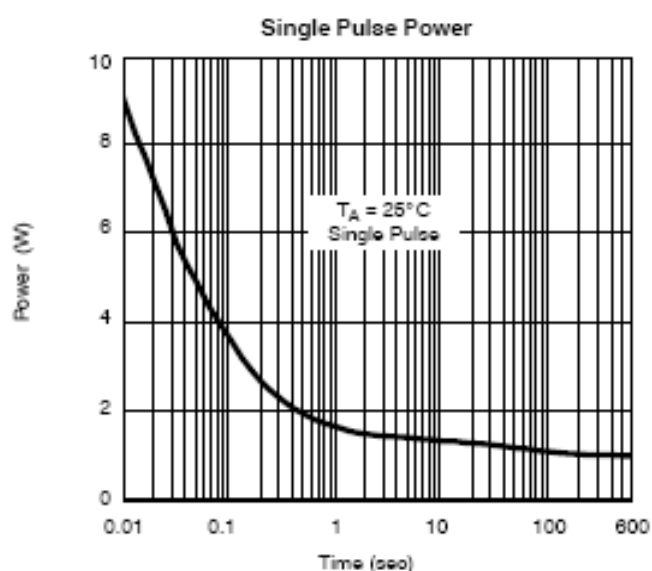
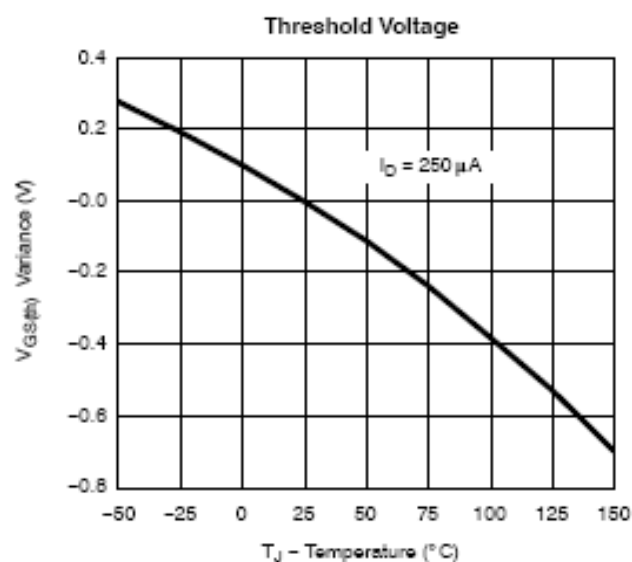




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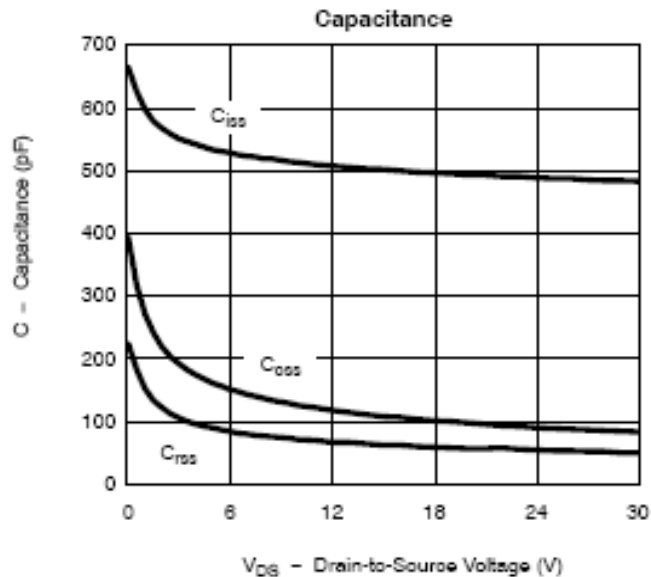
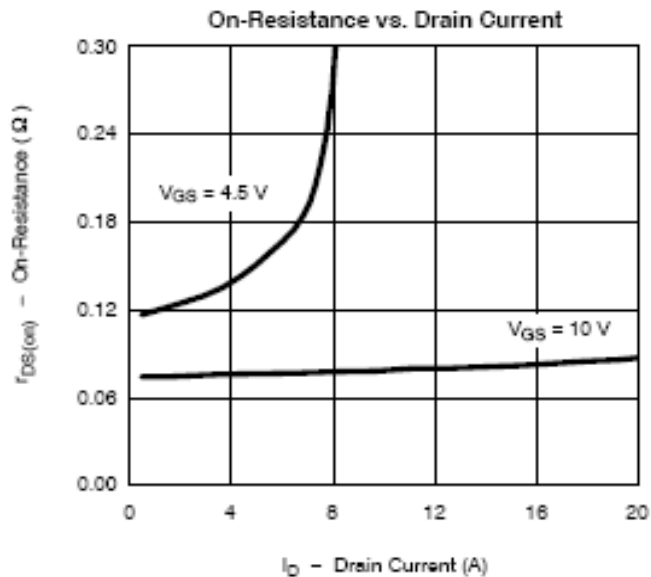
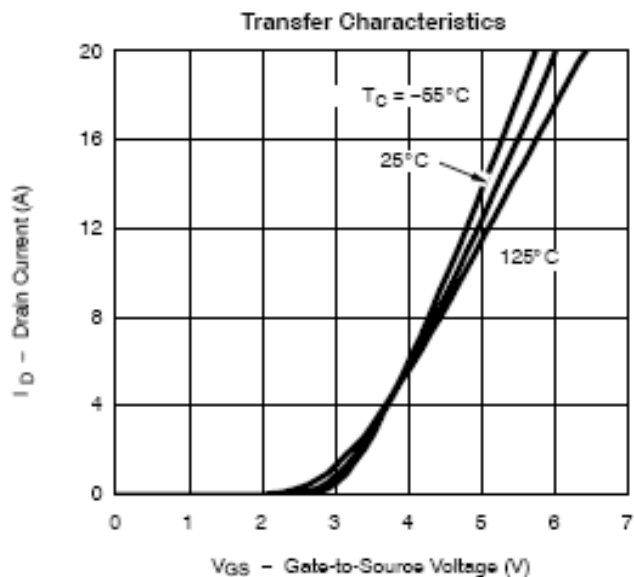
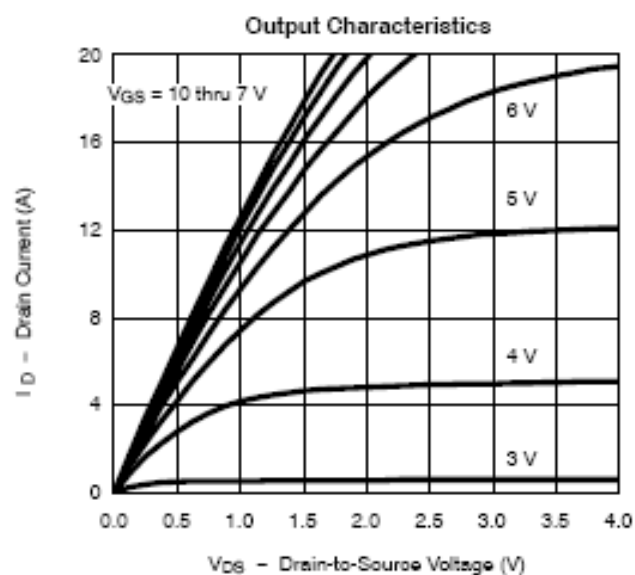




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TYPICAL CHARACTERISTICS (P-Channel)

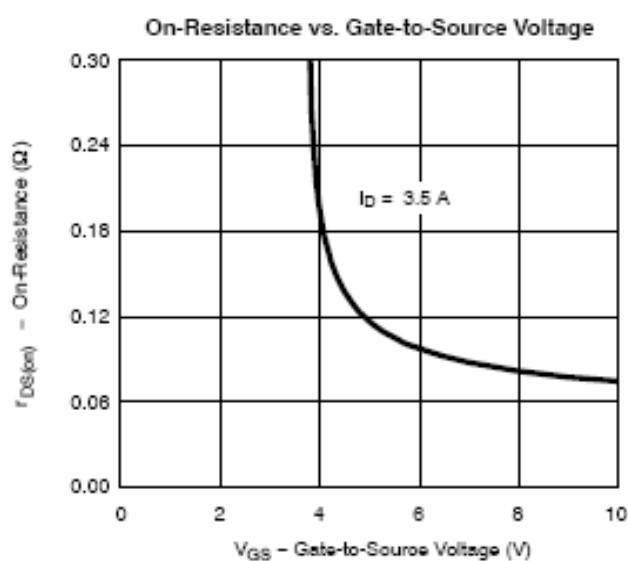
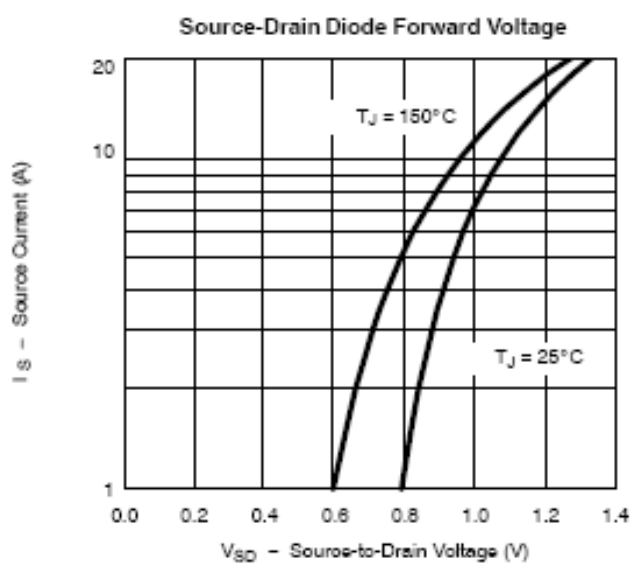
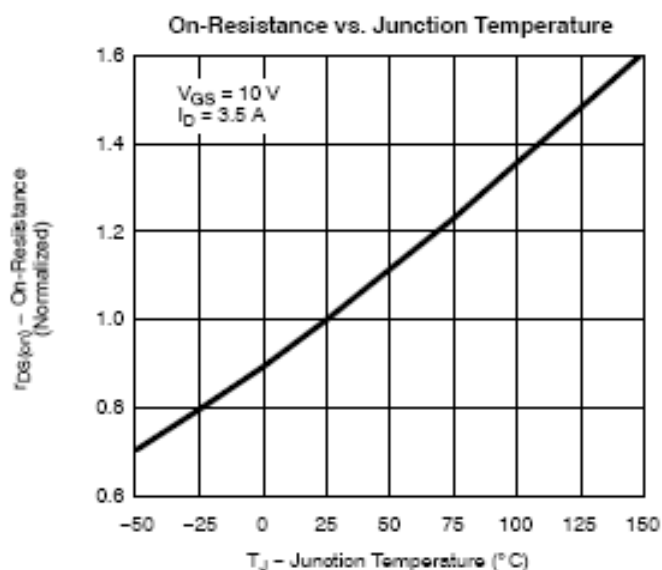
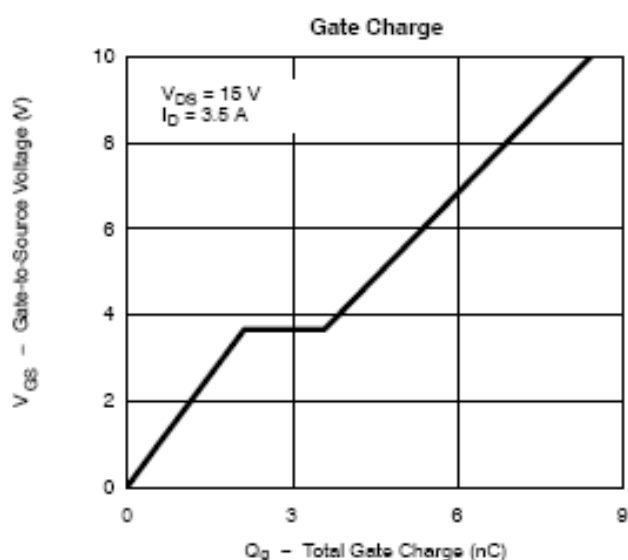




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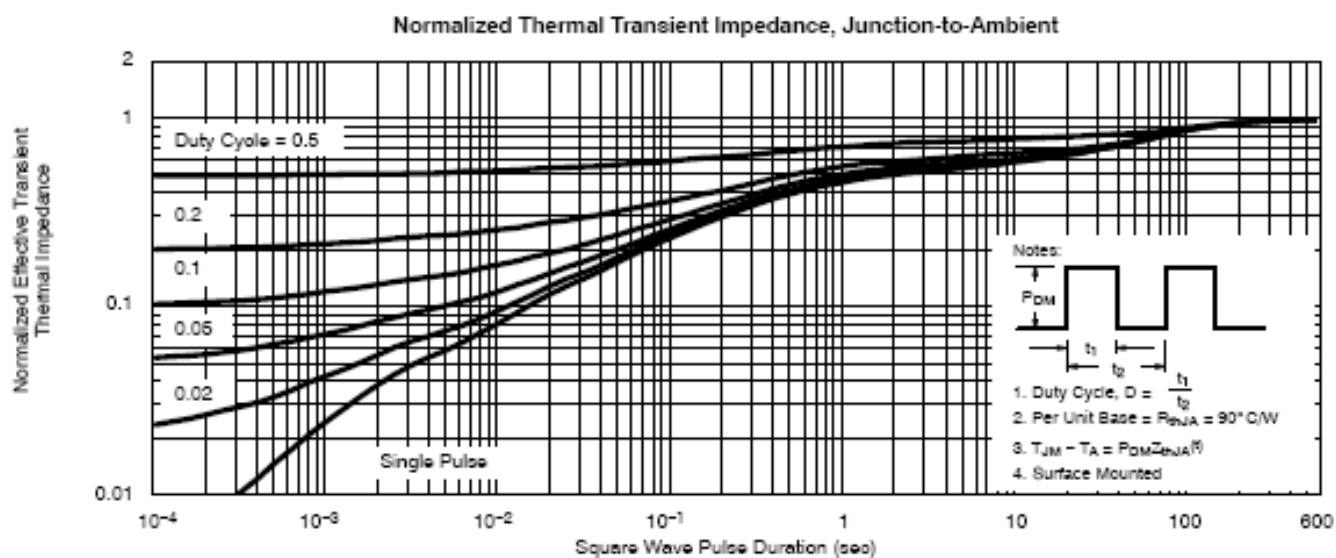
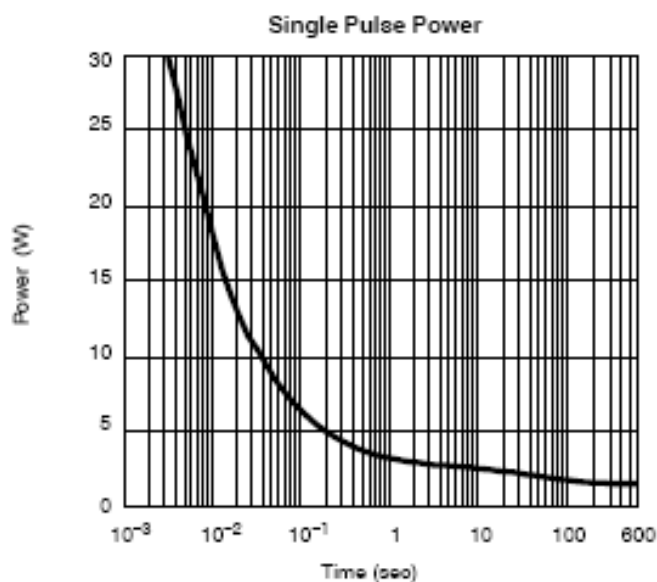
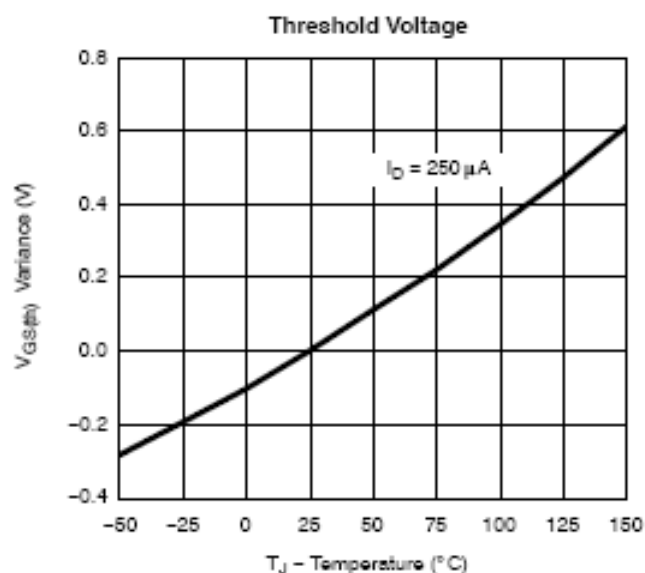




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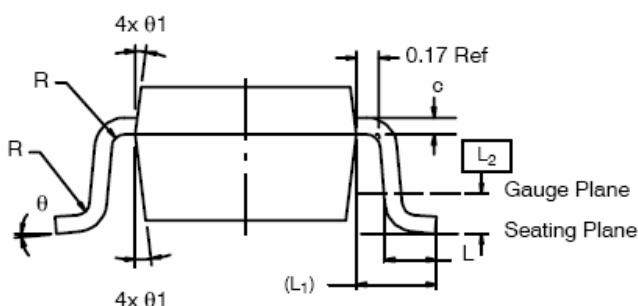
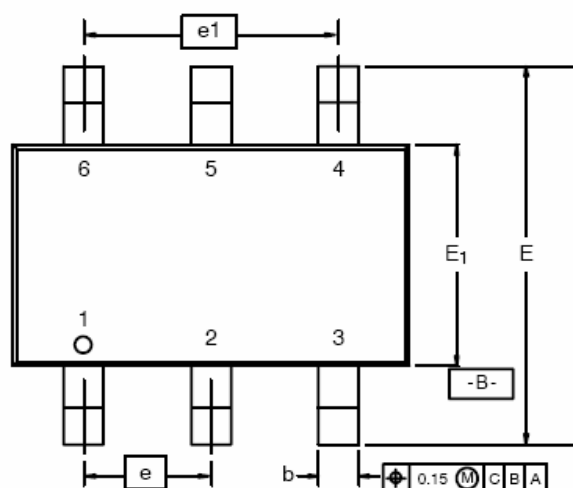




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TSOP- 6P PACKAGE OUTLINE



Dim	MILLIMETERS			INCHES		
	Min	Nom	Max	Min	Nom	Max
A	0.91	-	1.10	0.036	-	0.043
A ₁	0.01	-	0.10	0.0004	-	0.004
A ₂	0.90	-	1.00	0.035	0.038	0.039
b	0.30	0.32	0.45	0.012	0.013	0.018
c	0.10	0.15	0.20	0.004	0.006	0.008
D	2.95	3.05	3.10	0.116	0.120	0.122
E	2.70	2.85	2.98	0.106	0.112	0.117
E ₁	1.55	1.65	1.70	0.061	0.065	0.067
e	1.00 BSC			0.0394 BSC		
e ₁	1.90	2.00	2.10	0.075	0.080	0.085
L	0.35	-	0.50	0.014	-	0.020
L ₁	0.60 Ref			0.024 Ref		
L ₂	0.25 BSC			0.010 BSC		
R	0.10	-	-	0.004	-	-
θ	0°	4°	8°	0°	4°	8°
θ ₁	7° Nom			7° Nom		



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