



# SPC6601

## N & P Pair Enhancement Mode MOSFET

### DESCRIPTION

The SPC6601 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.

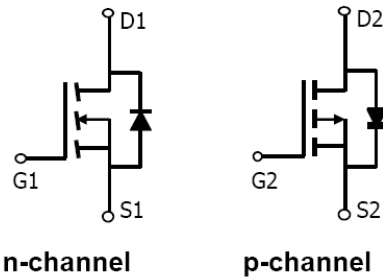
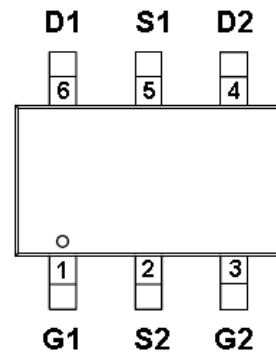
### FEATURES

- ◆ N-Channel
  - 30V/2.8A,  $R_{DS(ON)} = 68m\Omega @ V_{GS} = 10V$
  - 30V/2.3A,  $R_{DS(ON)} = 78m\Omega @ V_{GS} = 4.5V$
  - 30V/1.5A,  $R_{DS(ON)} = 108m\Omega @ V_{GS} = 2.5V$
- ◆ P-Channel
  - 30V/-2.8A,  $R_{DS(ON)} = 105m\Omega @ V_{GS} = -10V$
  - 30V/-2.5A,  $R_{DS(ON)} = 120m\Omega @ V_{GS} = -4.5V$
  - 30V/-1.5A,  $R_{DS(ON)} = 150m\Omega @ V_{GS} = -2.5V$
- ◆ Super high density cell design for extremely low  $R_{DS(ON)}$
- ◆ Exceptional on-resistance and maximum DC current capability
- ◆ TSOT- 23-6P package design

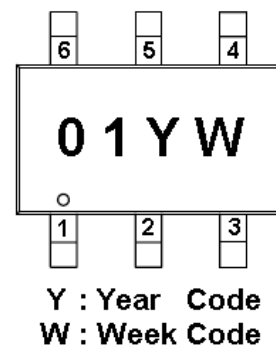
### APPLICATIONS

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

### PIN CONFIGURATION( TSOT- 23-6P )



### PART MARKING





# SPC6601

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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
SPC6601TS26RGB	TSOT- 23-6P	01YW

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

※ SPC6601TS26RGB : Tape Reel ; Pb – Free ; Halogen -Free

### ABSOLUTE MAXIMUM RATINGS

(TA=25°C Unless otherwise noted)

Parameter	Symbol	Typical		Unit	
		N-Channel	P-Channel		
Drain-Source Voltage	V <sub>DSS</sub>	30	-30	V	
Gate –Source Voltage	V <sub>GSS</sub>	±12	±12	V	
Continuous Drain Current(T <sub>J</sub> =150°C)	I <sub>D</sub>	TA=25°C	-2.8	A	
		TA=70°C	-2.1		
Pulsed Drain Current	I <sub>DM</sub>	10	-8	A	
Continuous Source Current(Diode Conduction)	I <sub>S</sub>	1.25	-1.4	A	
Power Dissipation	P <sub>D</sub>	1.15		W	
		0.75			
Operating Junction Temperature	T <sub>J</sub>	-55/150		°C	
Storage Temperature Range	T <sub>STG</sub>	-55/150		°C	
Thermal Resistance-Junction to Ambient	R <sub>θJA</sub>	T ≤ 10sec	50	52	°C/W
		Steady State	90	90	



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### ELECTRICAL CHARACTERISTICS

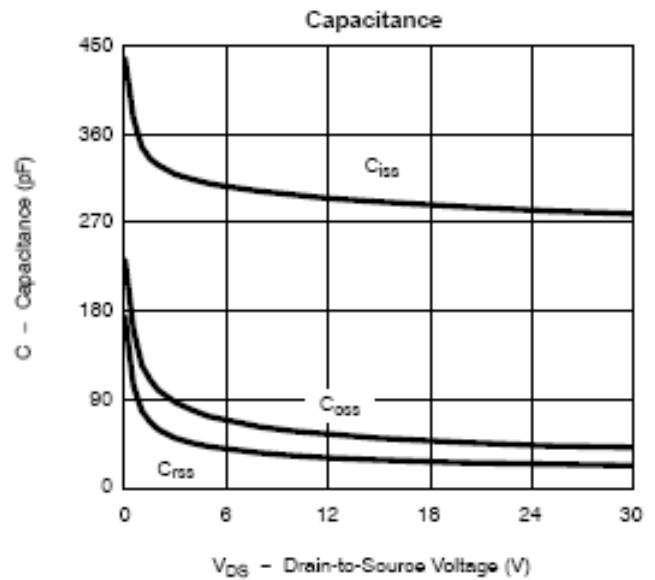
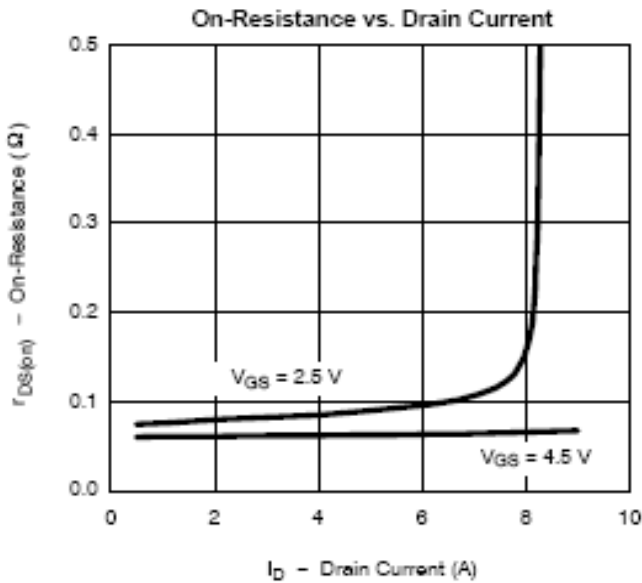
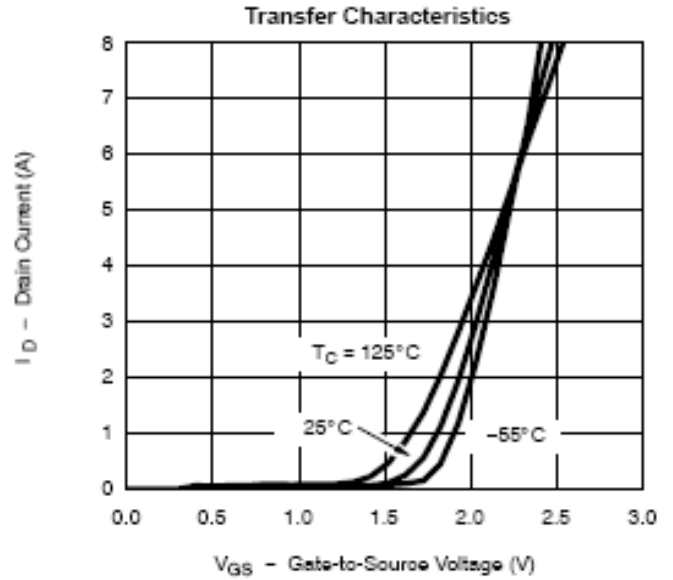
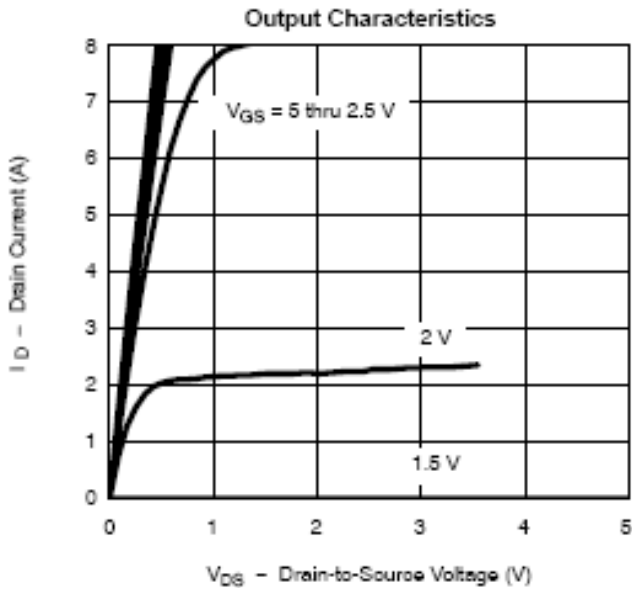
(TA=25°C Unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit		
<b>Static</b>								
Drain-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> = 250uA	N-Ch	30		V		
		V <sub>GS</sub> =0V, I <sub>D</sub> =-250uA	P-Ch	-30				
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250uA	N-Ch	0.8	1.6	V		
		V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =-250uA	P-Ch	-0.4	-1.0			
Gate Leakage Current	I <sub>GSS</sub>	V <sub>DS</sub> =0V, V <sub>GS</sub> =±12V	N-Ch		±100	nA		
		V <sub>DS</sub> =0V, V <sub>GS</sub> =±12V	P-Ch		±100			
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> = 21V, V <sub>GS</sub> =0V	N-Ch		1	uA		
		V <sub>DS</sub> =-21V, V <sub>GS</sub> =0V	P-Ch		-1			
		V <sub>DS</sub> = 21V, V <sub>GS</sub> =0V T <sub>J</sub> =55°C	N-Ch		10			
		V <sub>DS</sub> =-21V, V <sub>GS</sub> =0V T <sub>J</sub> =55°C	P-Ch		-10			
On-State Drain Current	I <sub>D(on)</sub>	V <sub>DS</sub> ≥ 5V, V <sub>GS</sub> = 10V	N-Ch	6		A		
		V <sub>DS</sub> ≤ -5V, V <sub>GS</sub> =-10V	P-Ch	-6				
Drain-Source On-Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> = 10V, I <sub>D</sub> = 2.8A	N-Ch		0.048	0.068	Ω	
		V <sub>GS</sub> =-10V, I <sub>D</sub> =-2.8A	P-Ch		0.077	0.105		
		V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 2.3A	N-Ch		0.054	0.078		
		V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-2.5A	P-Ch		0.092	0.120		
		V <sub>GS</sub> = 2.5V, I <sub>D</sub> = 1.5A	N-Ch		0.079	0.108		
		V <sub>GS</sub> =-2.5V, I <sub>D</sub> =-1.5A	P-Ch		0.118	0.150		
Forward Transconductance	g <sub>fs</sub>	V <sub>DS</sub> =4.5V, I <sub>D</sub> =2.8A	N-Ch		4.6	S		
		V <sub>DS</sub> =-10V, I <sub>D</sub> =-2.8A	P-Ch		4			
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> = 1.25A, V <sub>GS</sub> =0V	N-Ch		0.8	1.2	V	
		I <sub>S</sub> =-1.2A, V <sub>GS</sub> =0V	P-Ch		-0.8	-1.2		
<b>Dynamic</b>								
Total Gate Charge	Q <sub>g</sub>	N-Channel V <sub>DS</sub> =15 , V <sub>GS</sub> =4.5V , I <sub>D</sub> =2.0A	N-Ch		4.2	6	nC	
Gate-Source Charge	Q <sub>gs</sub>		P-Channel		5.8			
		Gate-Drain Charge	Q <sub>gd</sub>	N-Channel		0.6		
P-Channel				0.8				
Turn-On Time	t <sub>d(on)</sub>	N-Channel V <sub>DD</sub> =15 , R <sub>L</sub> =10Ω V <sub>GEN</sub> =10V , R <sub>G</sub> =3Ω	N-Ch		2.5		nS	
			P-Ch		6			
	Turn-Off Time		t <sub>d(off)</sub>	N-Ch		2.5		
				P-Ch		3.9		
Turn-Off Time	t <sub>f</sub>	P-Channel V <sub>DD</sub> =-15V , R <sub>L</sub> =15Ω V <sub>GEN</sub> =-10V , R <sub>G</sub> =3Ω	N-Ch		20			
			P-Ch		40			
Turn-Off Time	t <sub>f</sub>		N-Ch		4			
			P-Ch		15			



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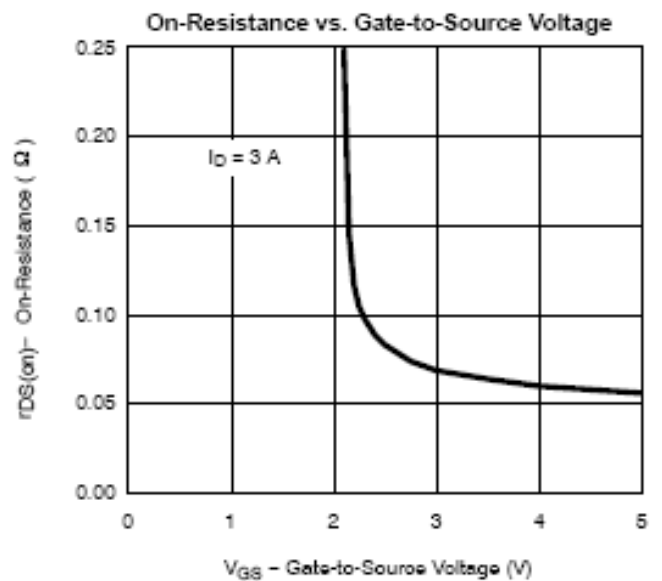
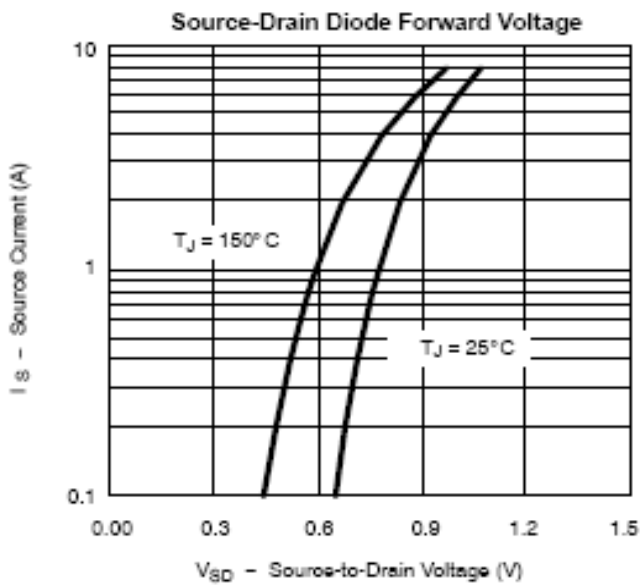
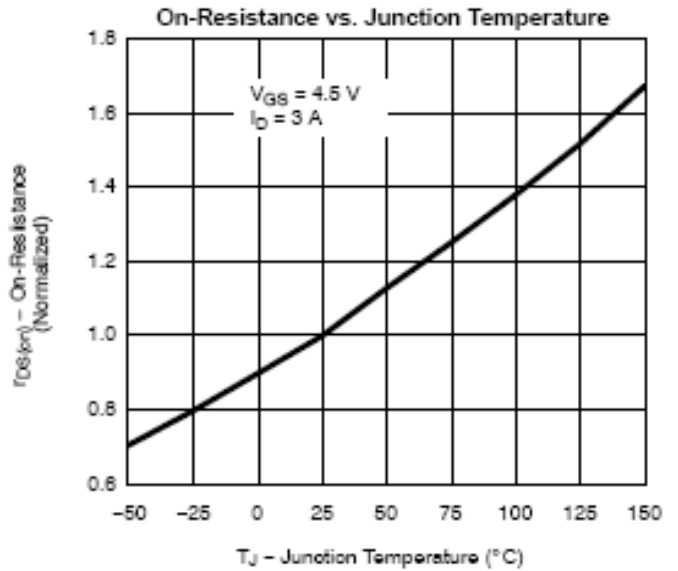
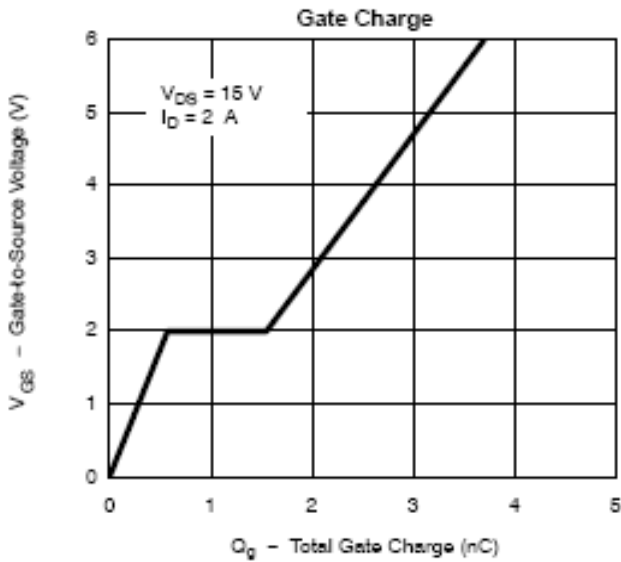
## TYPICAL CHARACTERISTICS ( N-Channel )





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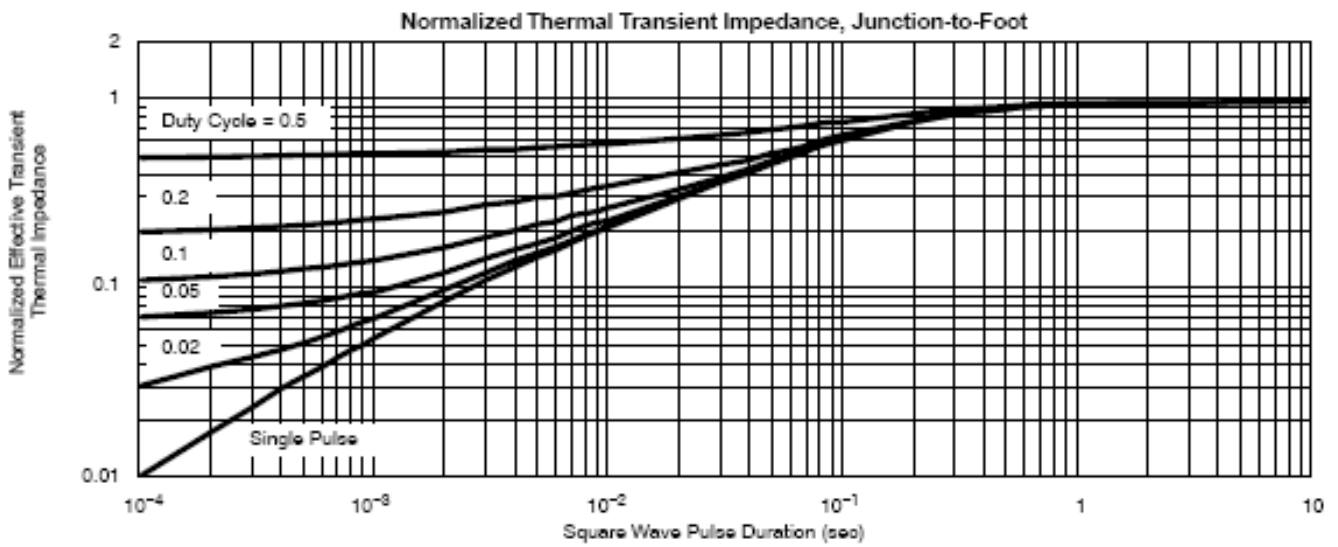
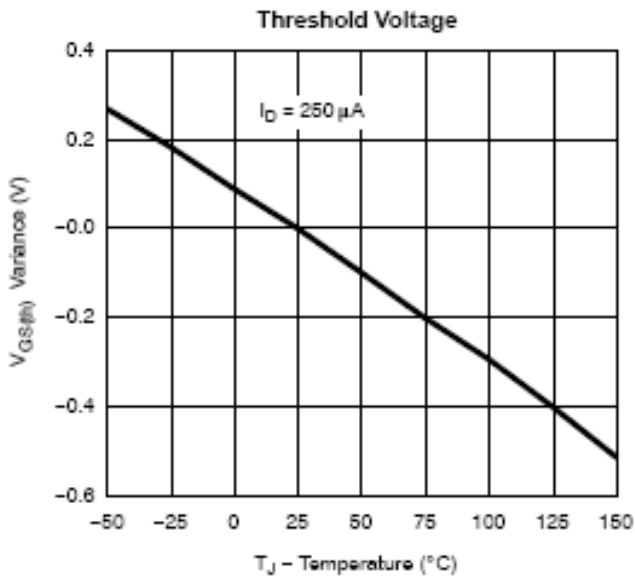
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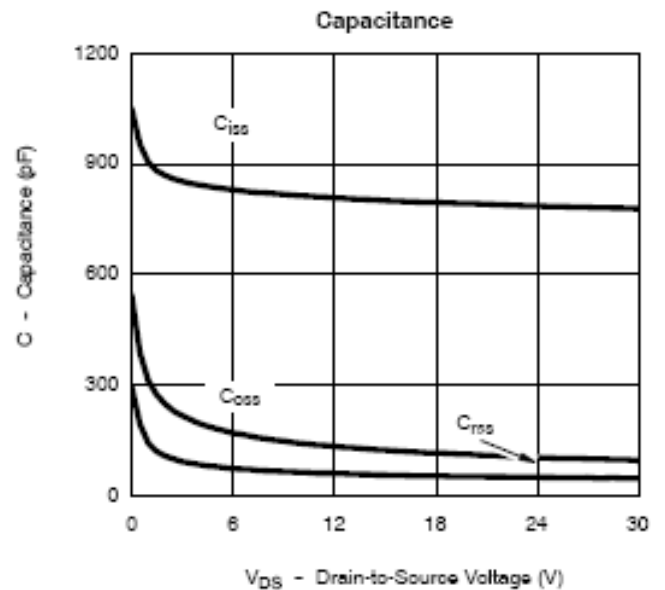
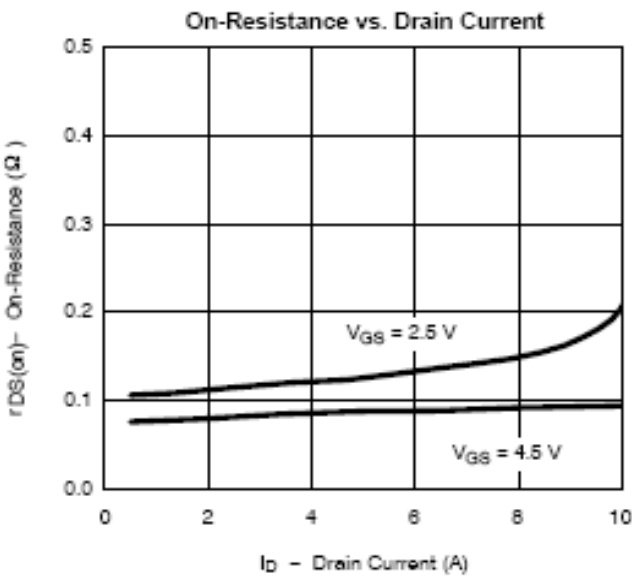
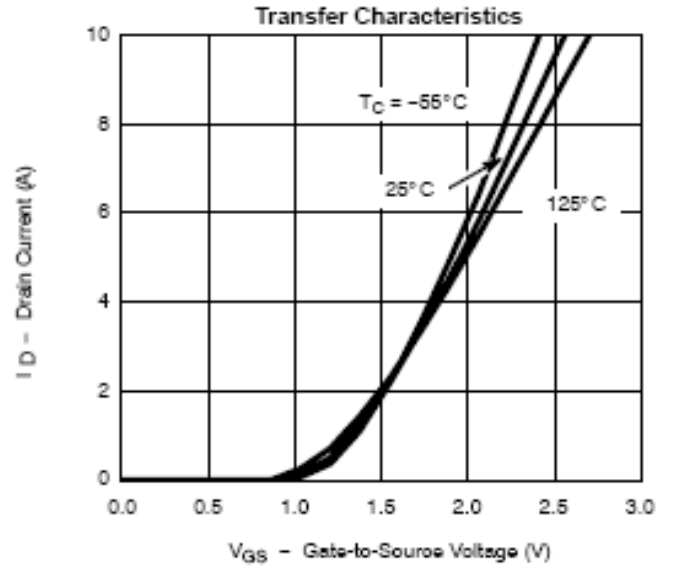
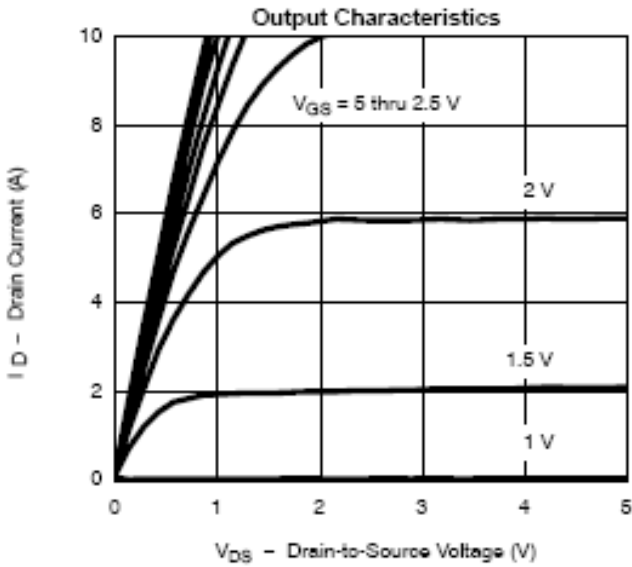
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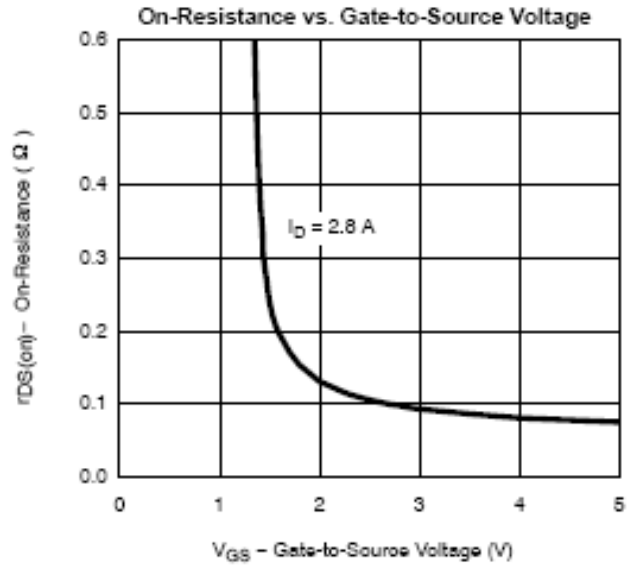
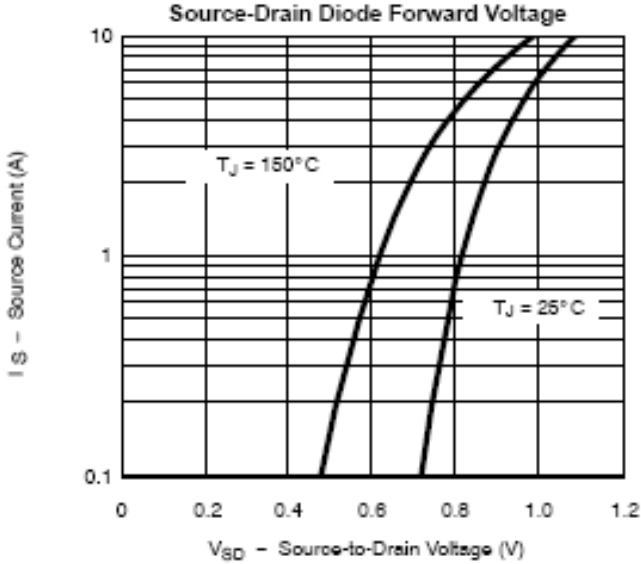
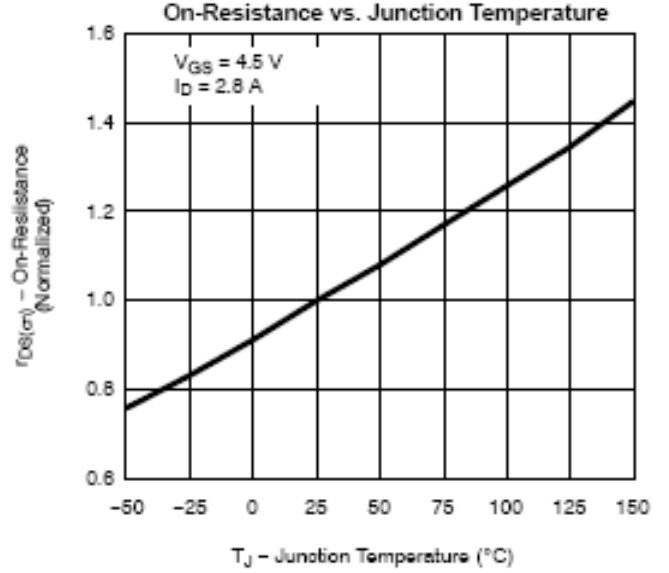
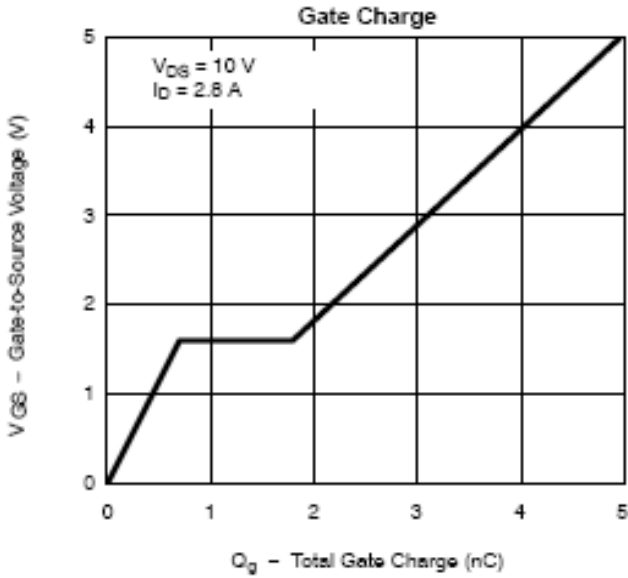
## TYPICAL CHARACTERISTICS ( P-Channel )





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## TYPICAL CHARACTERISTICS ( P-Channel )

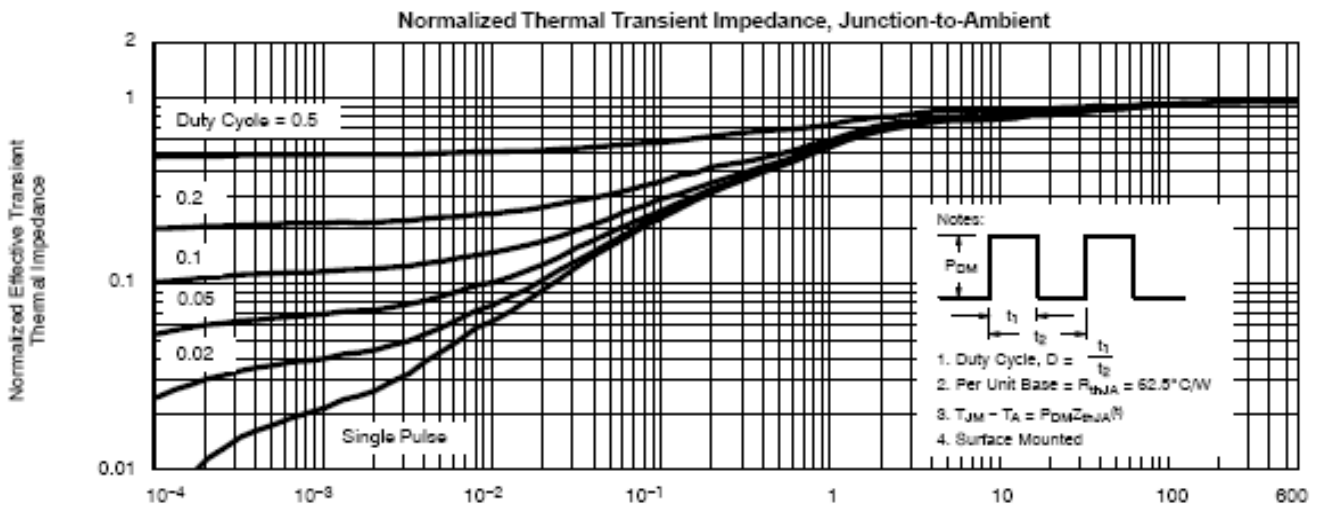
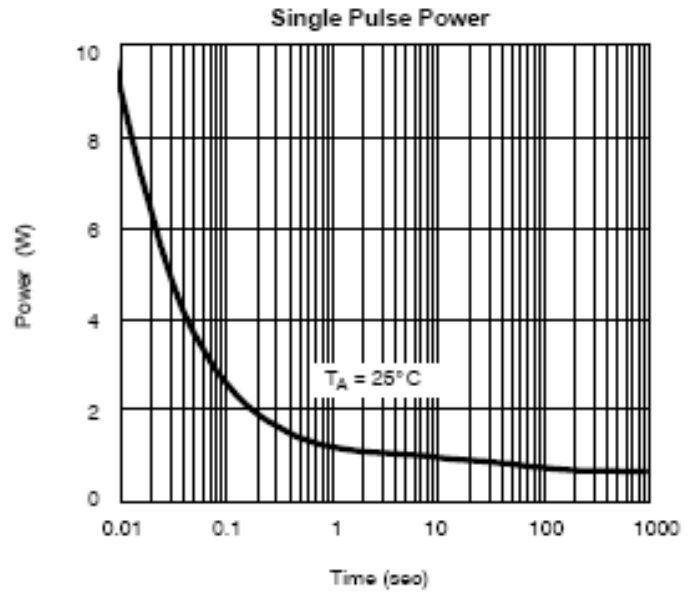
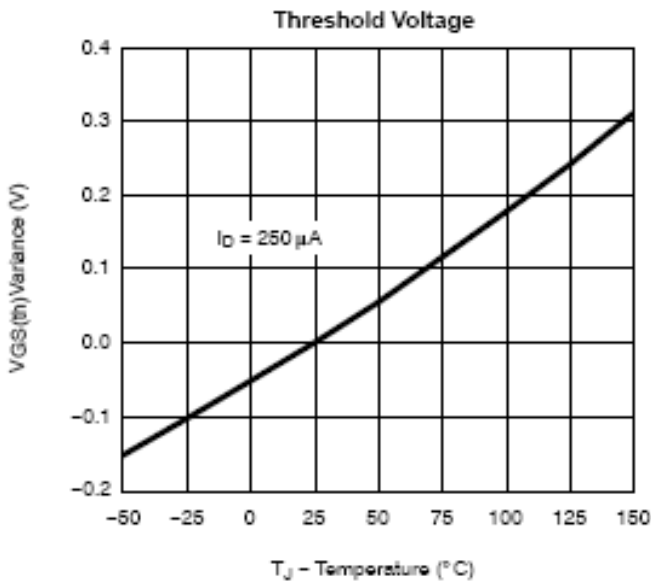






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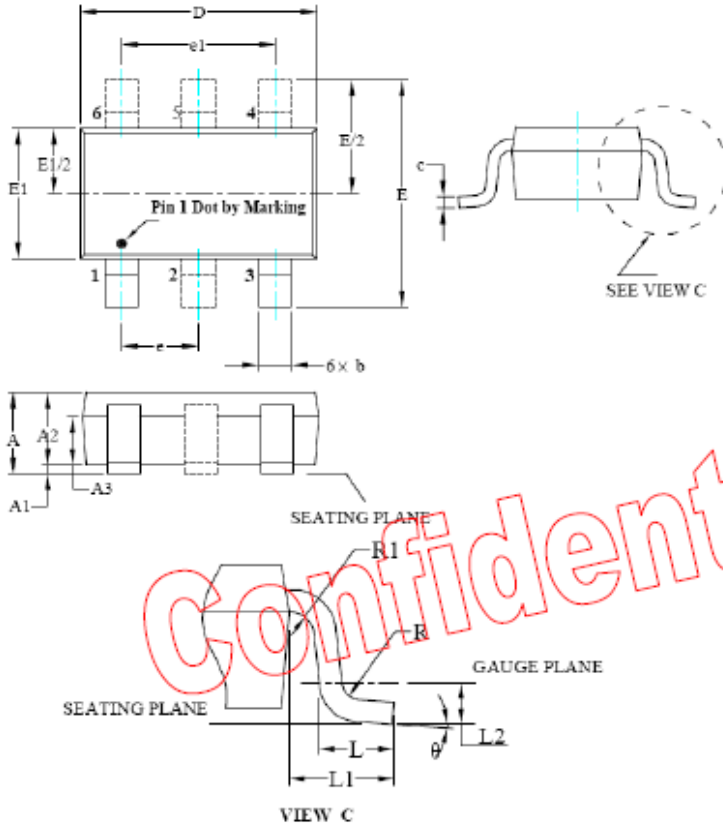
## TYPICAL CHARACTERISTICS ( P-Channel )





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## TSOT-23- 6P PACKAGE OUTLINE



SYMBOL	VARIATION					
	TSOT-2X					
	Millimeters			Inches		
	Min	Nom	Max	Min	Nom	Max
A	0.700	0.860	1.000	0.028	0.034	0.040
A1	0.000	0.060	0.100	0.000	0.002	0.004
A2	0.700	0.800	0.900	0.028	0.031	0.035
A3	—	0.420	0.520	—	0.017	0.020
b	0.300	0.425	0.500	0.012	0.017	0.020
c	0.080	0.138	0.200	0.003	0.005	0.008
D	2.692	2.900	3.099	0.106	0.114	0.122
E	2.591	2.800	3.000	0.102	0.110	0.118
E1	1.397	1.600	1.803	0.055	0.063	0.071
e	0.950 BSC			0.037 BSC		
e1	1.900 BSC			0.075 BSC		
L	0.300	0.450	0.600	0.012	0.018	0.024
L1	0.600 REF			0.024 REF		
L2	0.250 BSC			0.010 BSC		
R	0.100	—	—	0.004	—	—
R1	0.100	—	0.250	0.004	—	0.010
$\theta$	0°	—	6°	0°	—	6°



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