



# SPC4527

## N & P Pair Enhancement Mode MOSFET

### DESCRIPTION

The SPC4527 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.

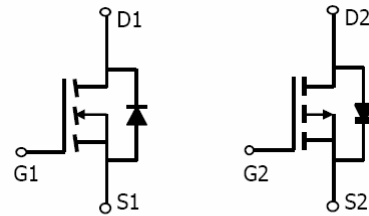
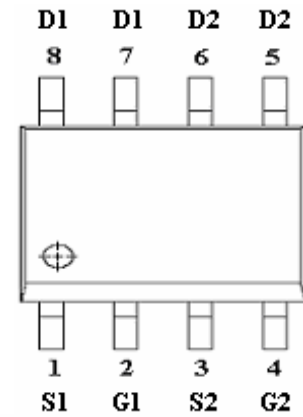
### FEATURES

- ◆ N-Channel
  - 40V/10A,  $R_{DS(ON)} = 24m\Omega @ V_{GS} = 10V$
  - 40V/ 8A,  $R_{DS(ON)} = 30m\Omega @ V_{GS} = 4.5V$
  - 40V/ 6A,  $R_{DS(ON)} = 36m\Omega @ V_{GS} = 2.5V$
- ◆ P-Channel
  - 40V/-10A,  $R_{DS(ON)} = 38m\Omega @ V_{GS} = -10V$
  - 40V/- 8A,  $R_{DS(ON)} = 46m\Omega @ V_{GS} = -4.5V$
- ◆ Super high density cell design for extremely low  $R_{DS(ON)}$
- ◆ Exceptional on-resistance and maximum DC current capability
- ◆ SOP – 8P package design

### APPLICATIONS

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

### PIN CONFIGURATION(SOP – 8P)



n-channel

p-channel

### PART MARKING



A : Lot Code  
B : Date Code



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### PIN DESCRIPTION

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

### ORDERING INFORMATION

Part Number	Package	Part Marking
SPC4527S8RGB	SOP- 8P	SPC4527

※ SPC4527S8RGB 13" Tape Reel ; Pb – Free ; Halogen – Free

e

### ABSOLUTE MAXIMUM RATINGS

(TA=25°C Unless otherwise noted)

Parameter	Symbol	Typical		Unit
		N-Channel	P-Channel	
Drain-Source Voltage	V <sub>DSS</sub>	40	-40	V
Gate –Source Voltage	V <sub>GSS</sub>	±20	±20	V
Continuous Drain Current(T <sub>J</sub> =150°C)	I <sub>D</sub>	TA=25°C	-10.0	A
		TA=70°C	-8.0	
Pulsed Drain Current	I <sub>DM</sub>	25	-25	A
Continuous Source Current(Diode Conduction)	I <sub>S</sub>	2.3	-2.3	A
Power Dissipation	P <sub>D</sub>	TA=25°C	2.8	W
		TA=70°C	1.8	
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	52	°C/W
		Steady State	80	



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### ELECTRICAL CHARACTERISTICS ( NMOS )

(TA=25°C Unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
<b>Static</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	40			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.5		1.0	
Gate Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 20V$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=40V, V_{GS}=0V$			1	uA
		$V_{DS}=40V, V_{GS}=0V$ $T_J=85^\circ C$			10	
On-State Drain Current	$I_{D(on)}$	$V_{DS}= 5V, V_{GS} =4.5V$	10			A
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}= 10V, I_D=10A$		0.020	0.025	$\Omega$
		$V_{GS}=4.5V, I_D= 8A$		0.023	0.030	
		$V_{GS}=2.5V, I_D= 6A$		0.027	0.036	
Forward Transconductance	$g_{fs}$	$V_{DS}=15V, I_D=6.2A$		13		S
Diode Forward Voltage	$V_{SD}$	$I_S=2.3A, V_{GS} =0V$		0.8	1.2	V
<b>Dynamic</b>						
Total Gate Charge	$Q_g$	$V_{DS}=20V, V_{GS}=4.5V$ $I_D= 5A$		10	14	nC
Gate-Source Charge	$Q_{gs}$			2.8		
Gate-Drain Charge	$Q_{gd}$			3.2		
Input Capacitance	$C_{iss}$	$V_{DS}=20V, V_{GS}=0V$ $f=1MHz$		850		pF
Output Capacitance	$C_{oss}$			110		
Reverse Transfer Capacitance	$C_{rss}$			75		
Turn-On Time	$t_{d(on)}$	$V_{DD}=20V, R_L=4\Omega$ $I_D=5.0A, V_{GEN}=10V$ $R_G=1\Omega$		6	12	nS
	$t_r$			10	20	
Turn-Off Time	$t_{d(off)}$			20	36	
	$t_f$			6	12	



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### ELECTRICAL CHARACTERISTICS ( PMOS )

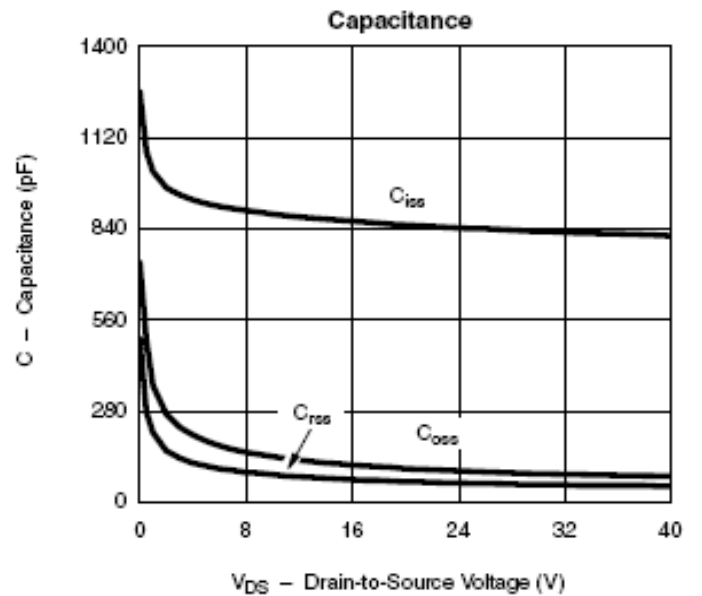
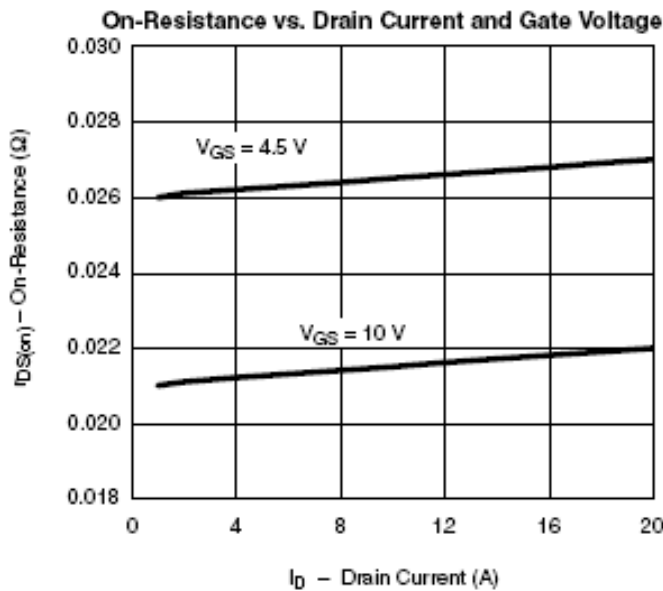
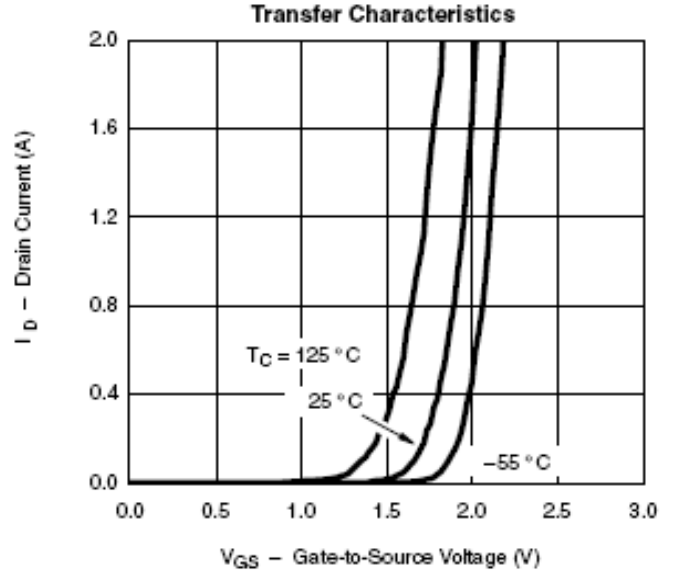
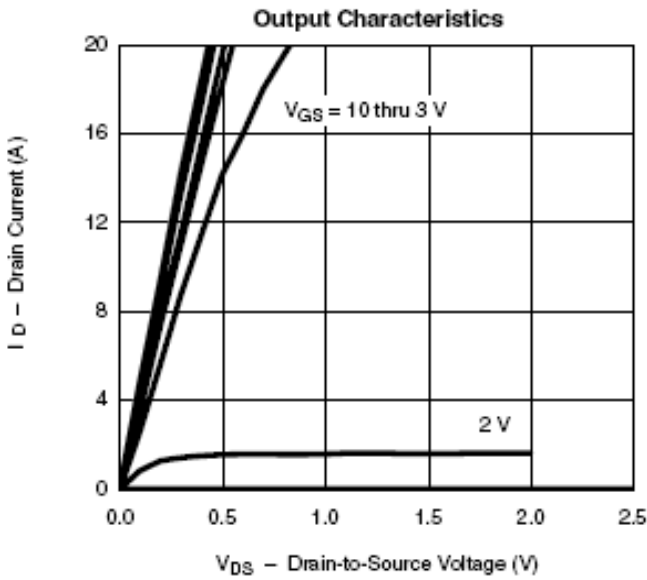
(TA=25°C Unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
<b>Static</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-40			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-0.8		-2.5	
Gate Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 20V$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=-36V, V_{GS}=0V$			-1	uA
		$V_{DS}=-36V, V_{GS}=0V$ $T_J=85^\circ C$			-10	
On-State Drain Current	$I_{D(on)}$	$V_{DS}=-5V, V_{GS}=-4.5V$	-10			A
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-10A$		0.032	0.038	$\Omega$
		$V_{GS}=-4.5V, I_D=-8A$		0.036	0.046	
Forward Transconductance	$g_{fs}$	$V_{DS}=-15V, I_D=-5.7A$		13		S
Diode Forward Voltage	$V_{SD}$	$I_S=-2.3A, V_{GS}=0V$		-0.8	-1.2	V
<b>Dynamic</b>						
Total Gate Charge	$Q_g$	$V_{DS}=-20V, V_{GS}=-4.5V$ $I_D=-5.0A$		13	20	nC
Gate-Source Charge	$Q_{gs}$			4.5		
Gate-Drain Charge	$Q_{gd}$			6.5		
Input Capacitance	$C_{iss}$	$V_{DS}=-20V, V_{GS}=0V$ $f=1MHz$		1100		pF
Output Capacitance	$C_{oss}$			145		
Reverse Transfer Capacitance	$C_{rss}$			115		
Turn-On Time	$t_{d(on)}$	$V_{DD}=-20V, R_L=4\Omega$ $I_D=-5.0A, V_{GEN}=-4.5V$ $R_G=1\Omega$		40	80	nS
	$t_r$			55	100	
Turn-Off Time	$t_{d(off)}$			30	60	
	$t_f$			12	20	



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## TYPICAL CHARACTERISTICS (NMOS)

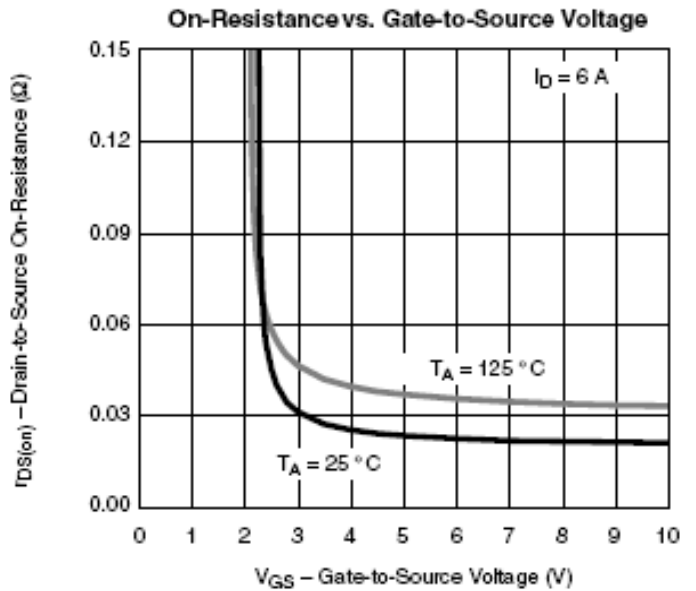
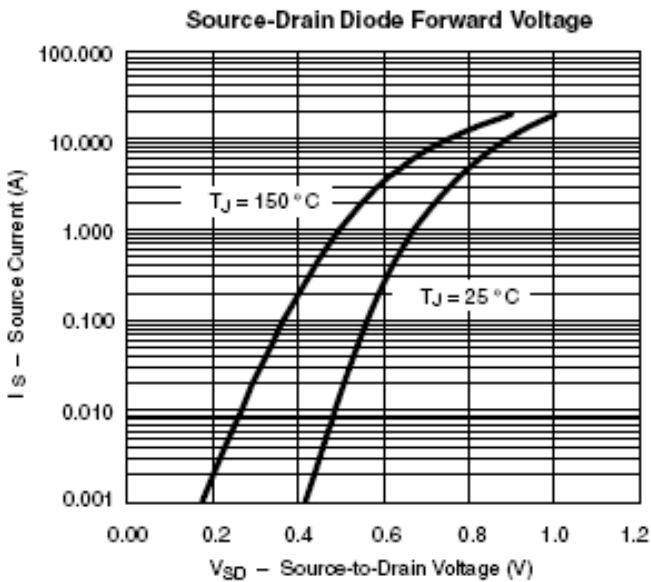
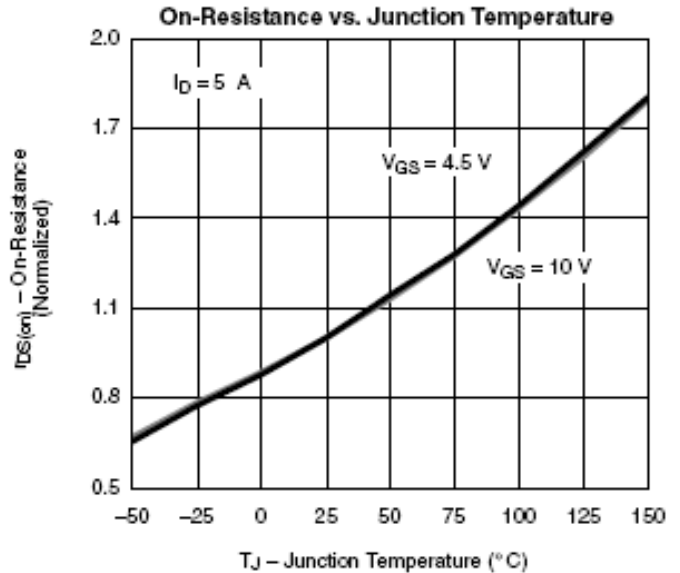
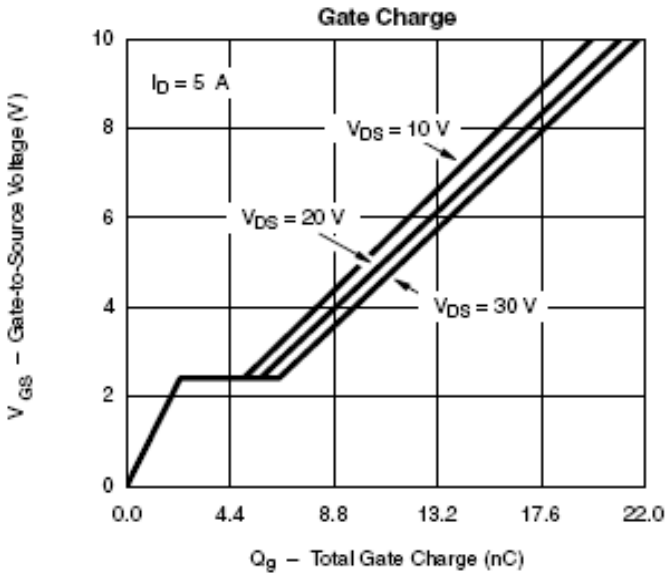




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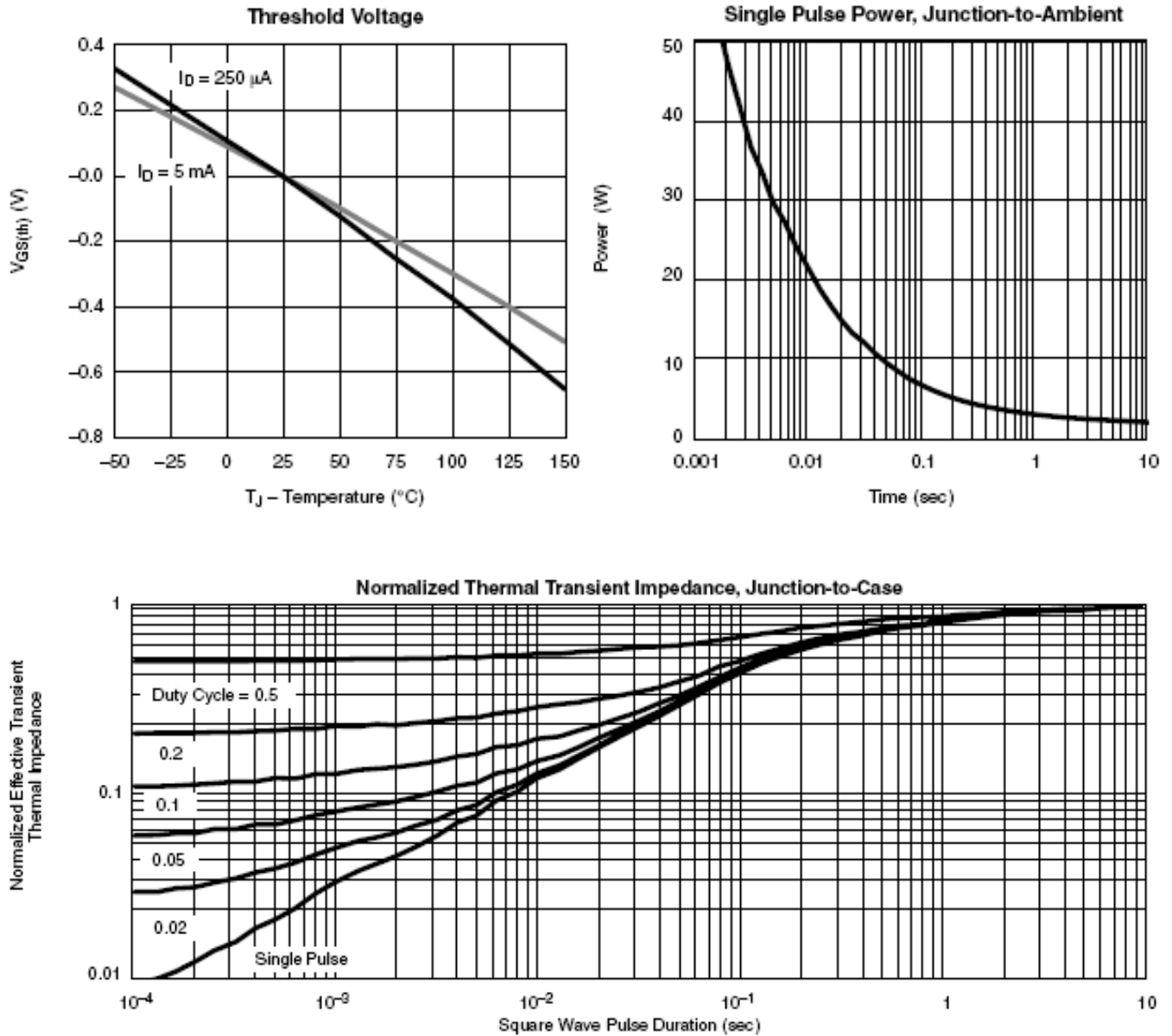
### TYPICAL CHARACTERISTICS (NMOS)





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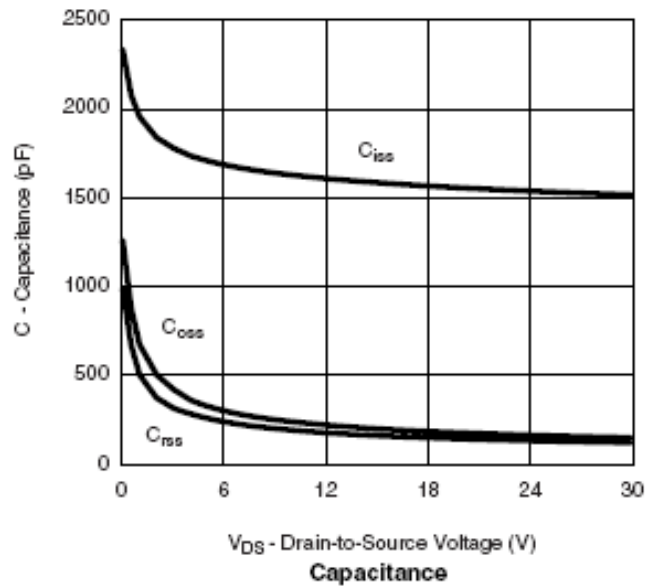
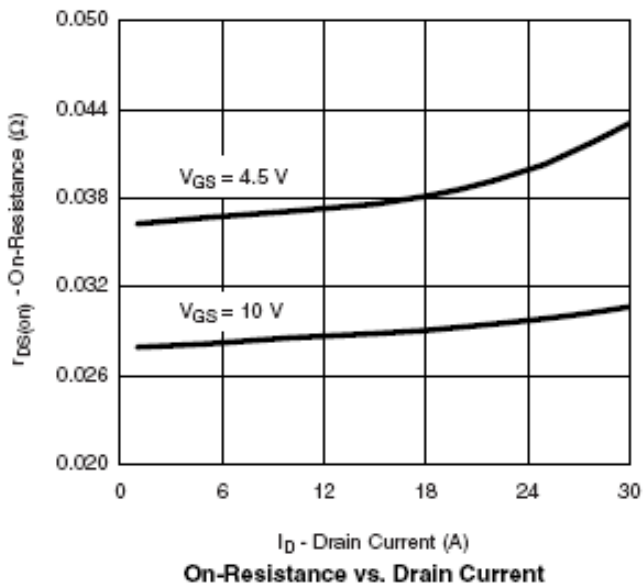
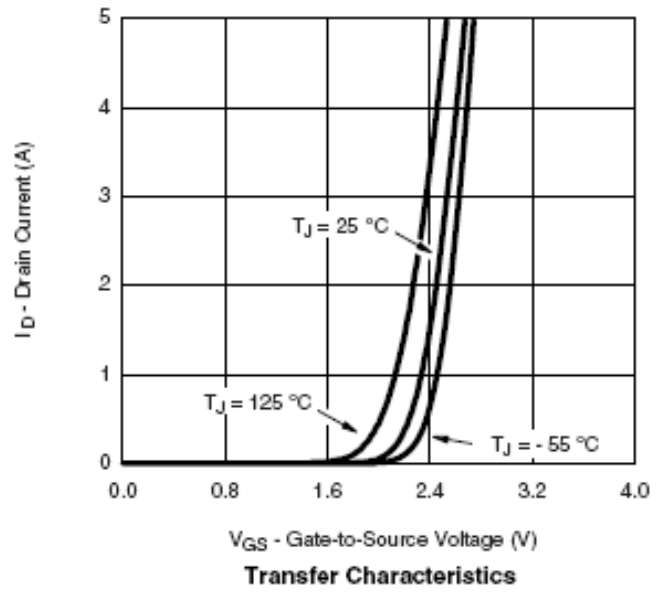
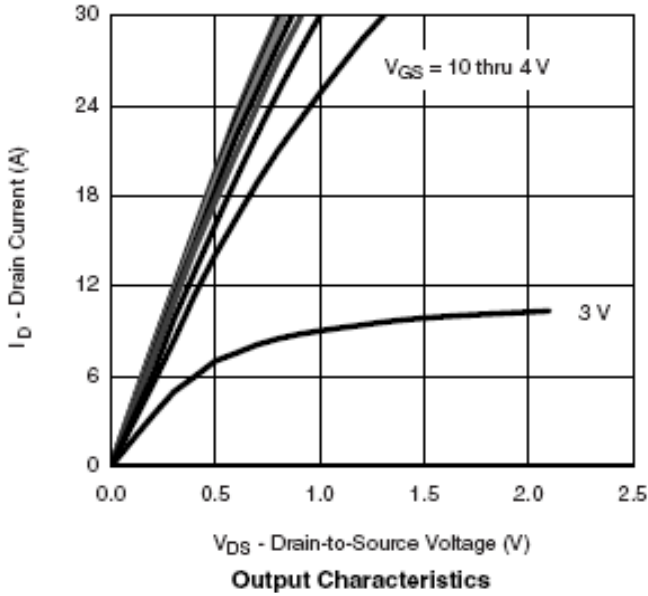
## TYPICAL CHARACTERISTICS (NMOS)





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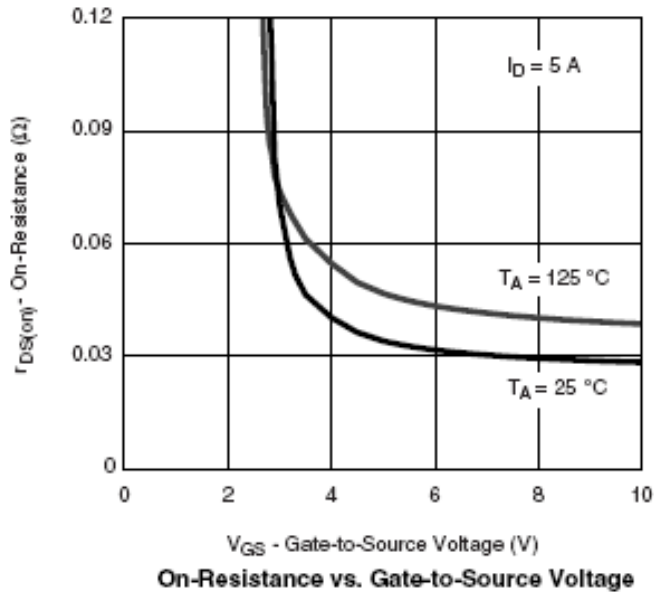
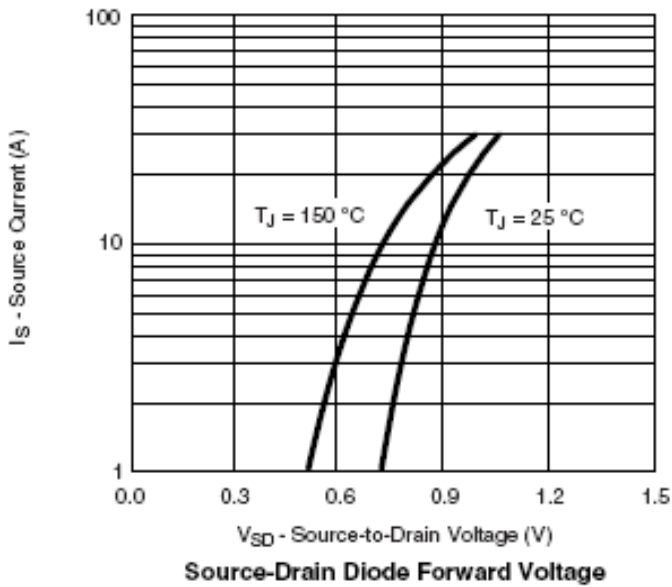
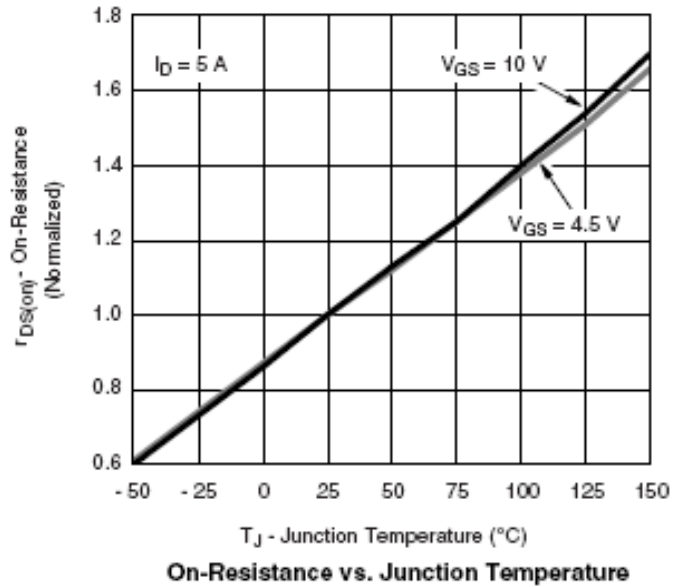
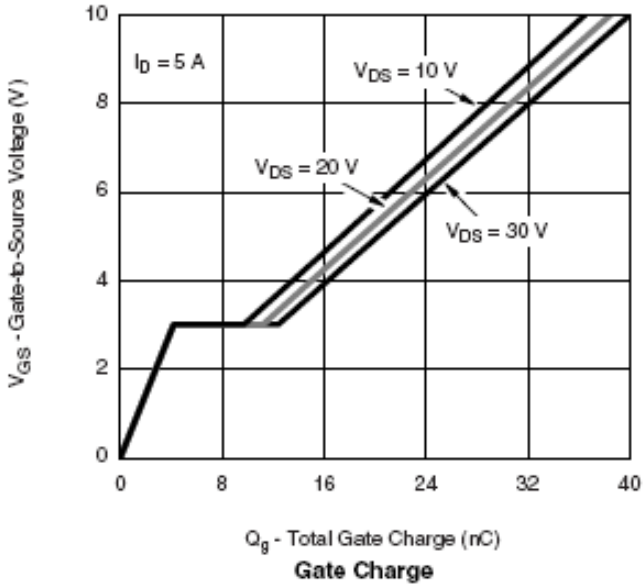






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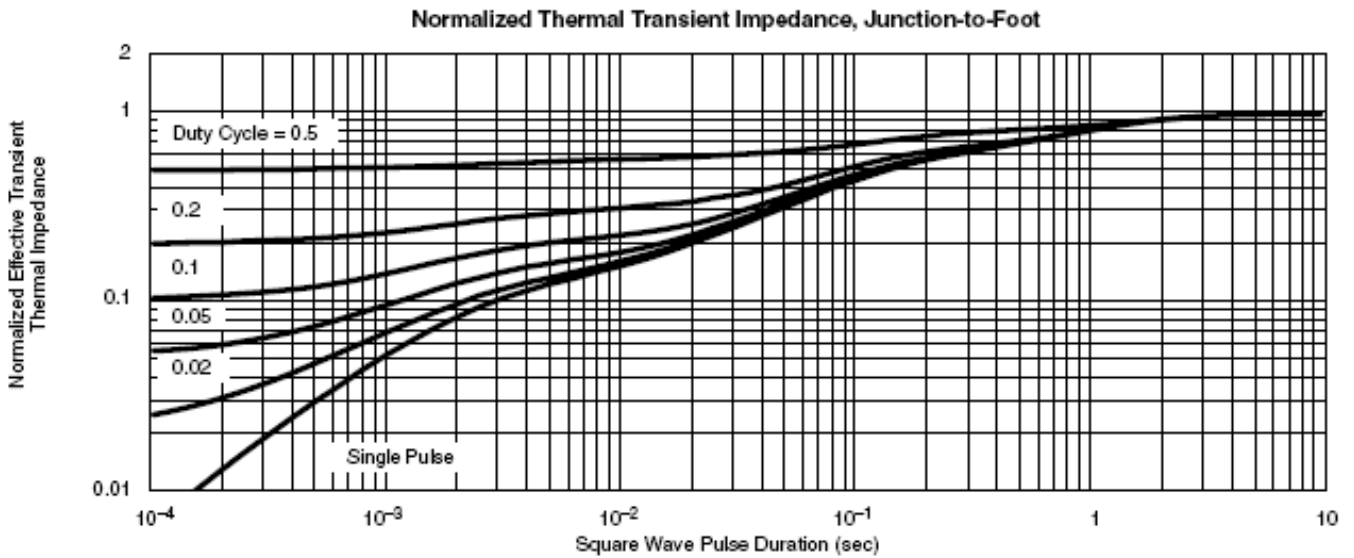
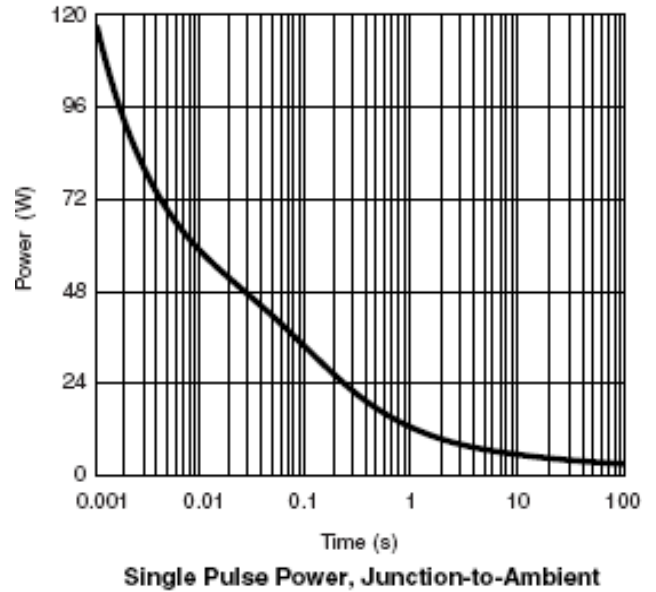
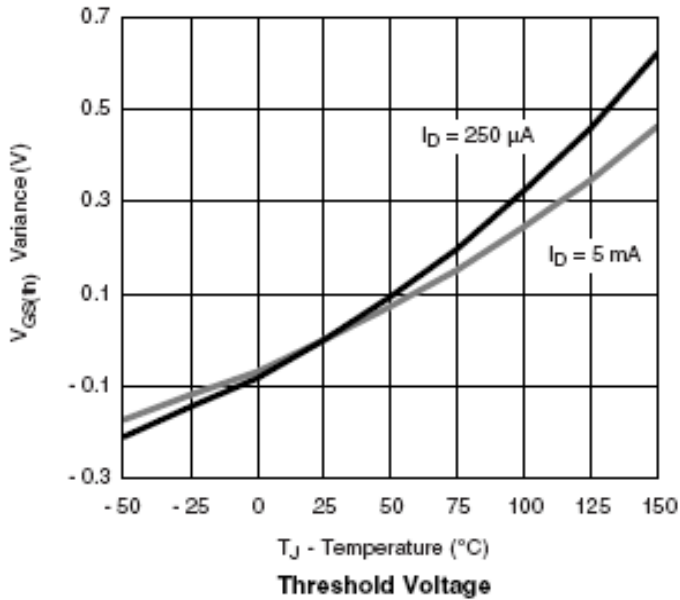
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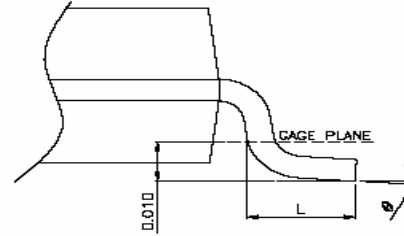
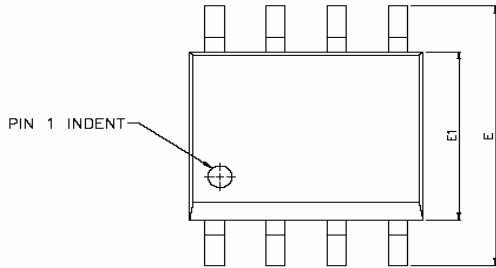




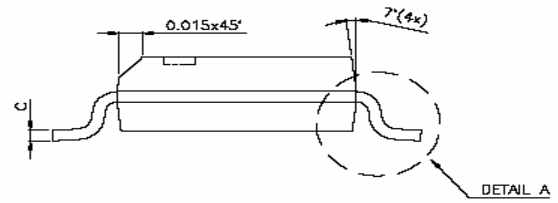
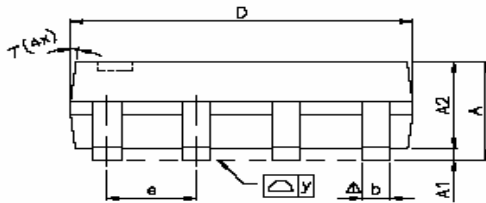
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### SOP- 8 PACKAGE OUTLINE



DETAIL A



SYMBOLS	DIMENSIONS IN MILLIMETERS			DIMENSIONS IN INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	1.47	1.60	1.73	0.058	0.063	0.068
A1	0.10	—	0.25	0.004	—	0.010
A2	—	1.45	—	—	0.057	—
b	0.33	0.41	0.51	0.013	0.016	0.020
C	0.19	0.20	0.25	0.0075	0.008	0.0098
D	4.80	4.85	4.95	0.189	0.191	0.195
E	5.80	6.00	6.20	0.228	0.236	0.244
E1	3.80	3.90	4.00	0.150	0.154	0.157
e	—	1.27	—	—	0.050	—
L	0.38	0.71	1.27	0.015	0.028	0.050
$\Delta$ y	—	—	0.076	—	—	0.003
$\theta$	0°	—	8°	0°	—	8°



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