



SPC4606

N & P Pair Enhancement Mode MOSFET

DESCRIPTION

The SPC4606 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.

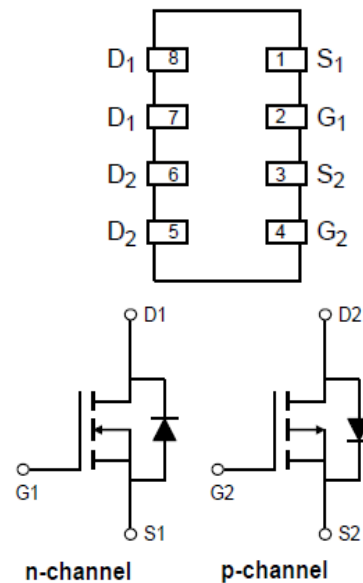
FEATURES

- N-Channel
30V/4.0A, $R_{DS(ON)}=40m\Omega @ V_{GS}=10V$
30V/3.6A, $R_{DS(ON)}=50m\Omega @ V_{GS}=4.5V$
- P-Channel
-30V/-4.0A, $R_{DS(ON)}=70m\Omega @ V_{GS}=-10V$
-30V/-3.2A, $R_{DS(ON)}=95m\Omega @ V_{GS}=-4.5V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- PPAK3x2-8L package design

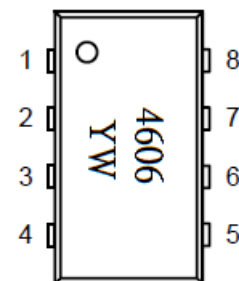
APPLICATIONS

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

PIN CONFIGURATION(PPAK3x2-8L)



PART MARKING



Y : Year Code
W : Week 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
SPC4606DN8RGB	PPAK3x2-8L	4606YW

※ SPC4606DN8RGB 13" Tape Reel ; Pb – Free ; Halogen – 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}	30	-30	V	
Gate –Source Voltage	V_{GSS}	20	-20	V	
Continuous Drain Current($T_J=150^{\circ}\text{C}$)	I_D	$T_A=25^{\circ}\text{C}$	4.0	-3.6	A
		$T_A=70^{\circ}\text{C}$	3.2	-3.0	
Pulsed Drain Current	I_{DM}	25	-15	A	
Continuous Source Current(Diode Conduction)	I_S	1.7	-1.0	A	
Power Dissipation	P_D	$T_A=25^{\circ}\text{C}$	2.0	1.25	W
		$T_A=70^{\circ}\text{C}$	1.3	0.8	
Operating Junction Temperature	T_J	-55/150		$^{\circ}\text{C}$	
Storage Temperature Range	T_{STG}	-55/150		$^{\circ}\text{C}$	
Thermal Resistance-Junction to Ambient	$R_{\theta JA}$	100	375	$^{\circ}\text{C}/\text{W}$	



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ELECTRICAL CHARACTERISTICS (NMOS)

(TA=25°C Unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	30			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.6		1.8	
Gate Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 20V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=24V, V_{GS}=1.0V$			1	uA
		$V_{DS}=24V, V_{GS}=0V$ $T_I=55^\circ C$			10	
On-State Drain Current	$I_{D(on)}$	$V_{DS} \geq 4.5V, V_{GS}=4.5V$	10			A
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=4.0A$		28	40	mΩ
		$V_{GS}=4.5V, I_D=3.6A$		35	50	
Forward Transconductance	g_{fs}	$V_{DS}=4.5V, I_D=5.4A$		12		S
Diode Forward Voltage	V_{SD}	$I_S=1.7A, V_{GS}=0V$		0.8	1.2	V
Dynamic						
Input Capacitance	C_{iss}	$V_{DS}=15V, V_{GS}=0V$ $f=1MHz$		450		pF
Output Capacitance	C_{oss}			240		
Reverse Transfer Capacitance	C_{rss}			38		
Total Gate Charge	Q_g	$V_{DS}=15V, V_{GS}=10V$ $I_D=6.7A$		10	18	nC
Gate-Source Charge	Q_{gs}			1.6		
Gate-Drain Charge	Q_{gd}			3.2		
Turn-On Time	$t_{d(on)}$	$V_{DD}=15V, R_L=15\Omega$ $V_{GEN}=10V, R_G=6\Omega$		7	15	nS
	t_r			10	20	
Turn-Off Time	$t_{d(off)}$			20	40	
	t_f			11	20	



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ELECTRICAL CHARACTERISTICS (PMOS)

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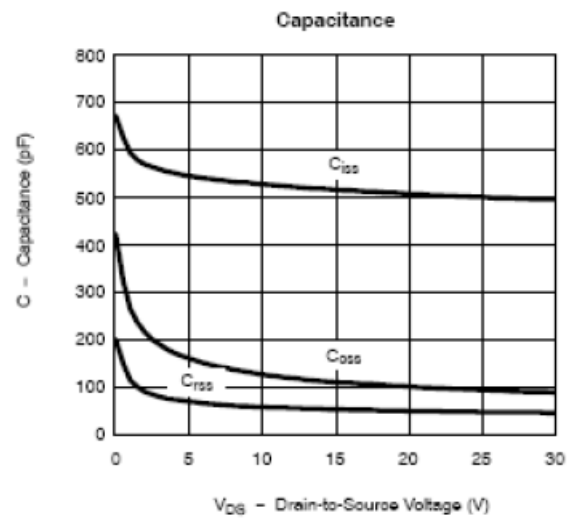
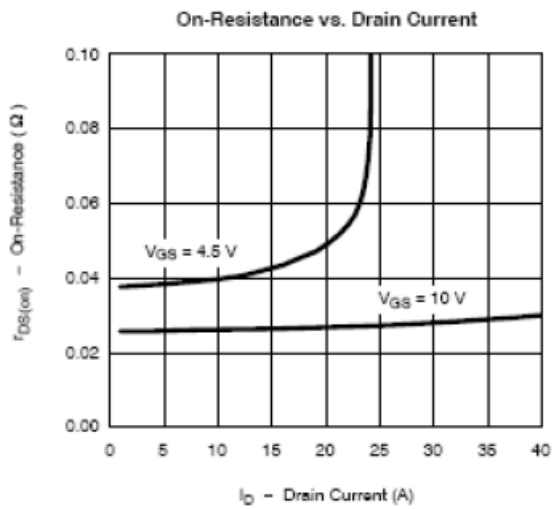
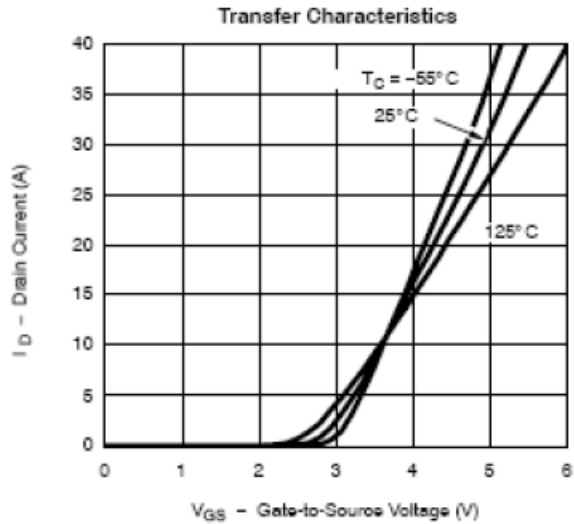
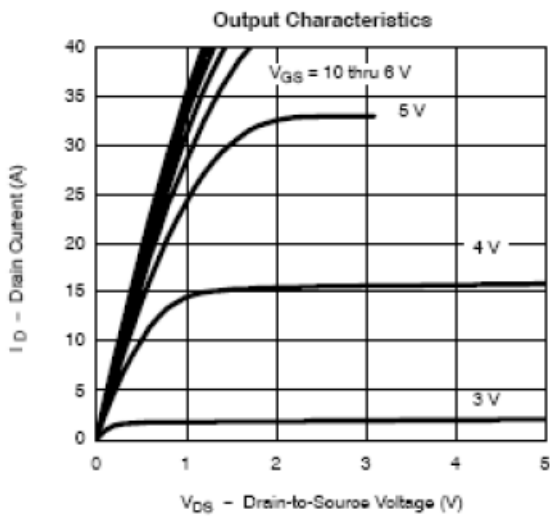
Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} =0V, I _D =-250uA	-30			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =-250uA	-0.8		-2.5	
Gate Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =±20V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-24V, V _{GS} =0V			-1	uA
		V _{DS} =-24V, V _{GS} =0V T _J =55°C			-10	
On-State Drain Current	I _{D(on)}	V _{DS} ≤ -5V, V _{GS} =-10V	-10			A
Drain-Source On-Resistance	R _{DSS(on)}	V _{GS} =-10V, I _D =-4.0A		62	70	mΩ
		V _{GS} =-4.5V, I _D =-3.2A		85	95	
Forward Transconductance	g _{fs}	V _{DS} =-5.0V, I _D =-4.0A		10		S
Diode Forward Voltage	V _{SD}	I _S =-1.0A, V _{GS} =0V		-0.8	-1.2	V
Dynamic						
Total Gate Charge	Q _g	V _{DS} =-15V, V _{GS} =-10V I _D = -3.5A		10	18	nC
Gate-Source Charge	Q _{gs}			1.6		
Gate-Drain Charge	Q _{gd}			3.0		
Input Capacitance	C _{iss}	V _{DS} =-15V, V _{GS} =0V f=1MHz		450		pF
Output Capacitance	C _{oss}			95		
Reverse Transfer Capacitance	C _{rss}			55		
Turn-On Time	t _{d(on)}	V _{DD} =-15V, R _L =15Ω I _D =-1.0A, V _{GEN} =-10V R _G =6Ω		8	18	nS
	t _r			8	18	
Turn-Off Time	t _{d(off)}			25	50	
	t _f			25	35	



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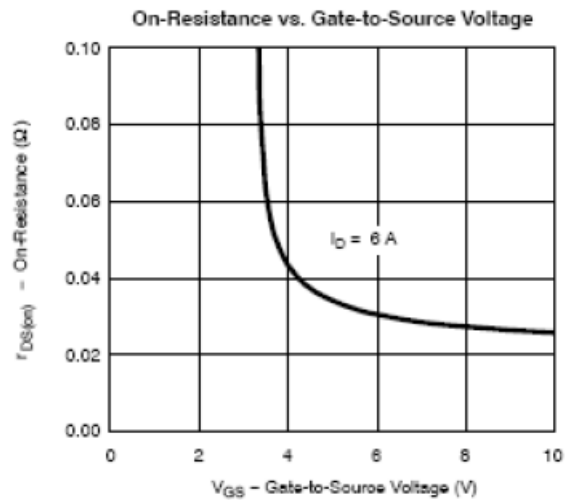
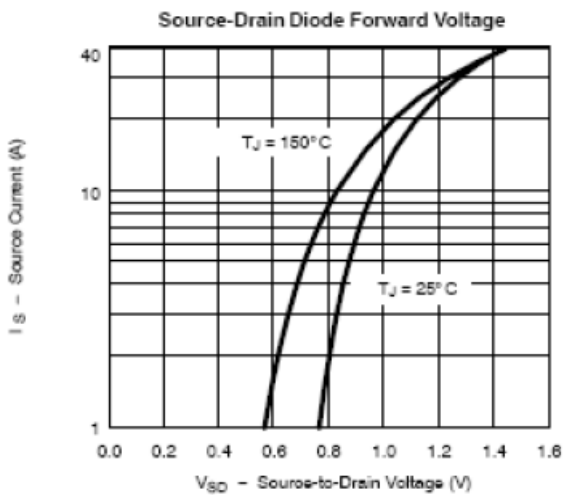
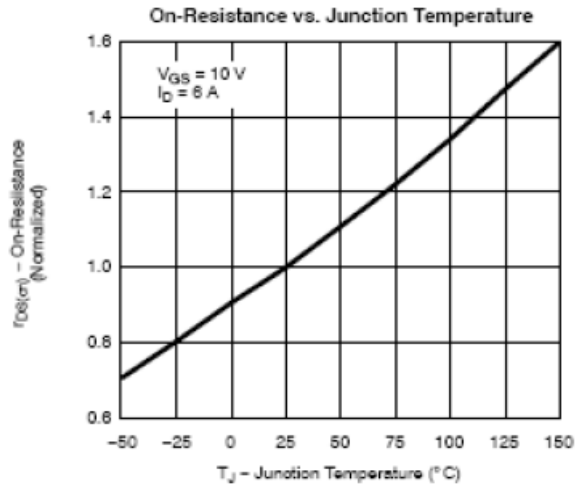
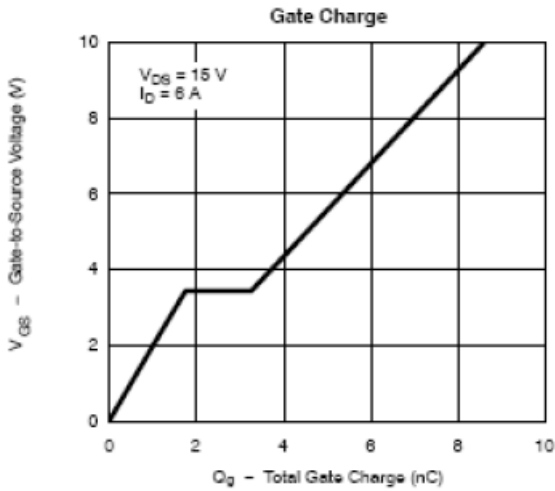




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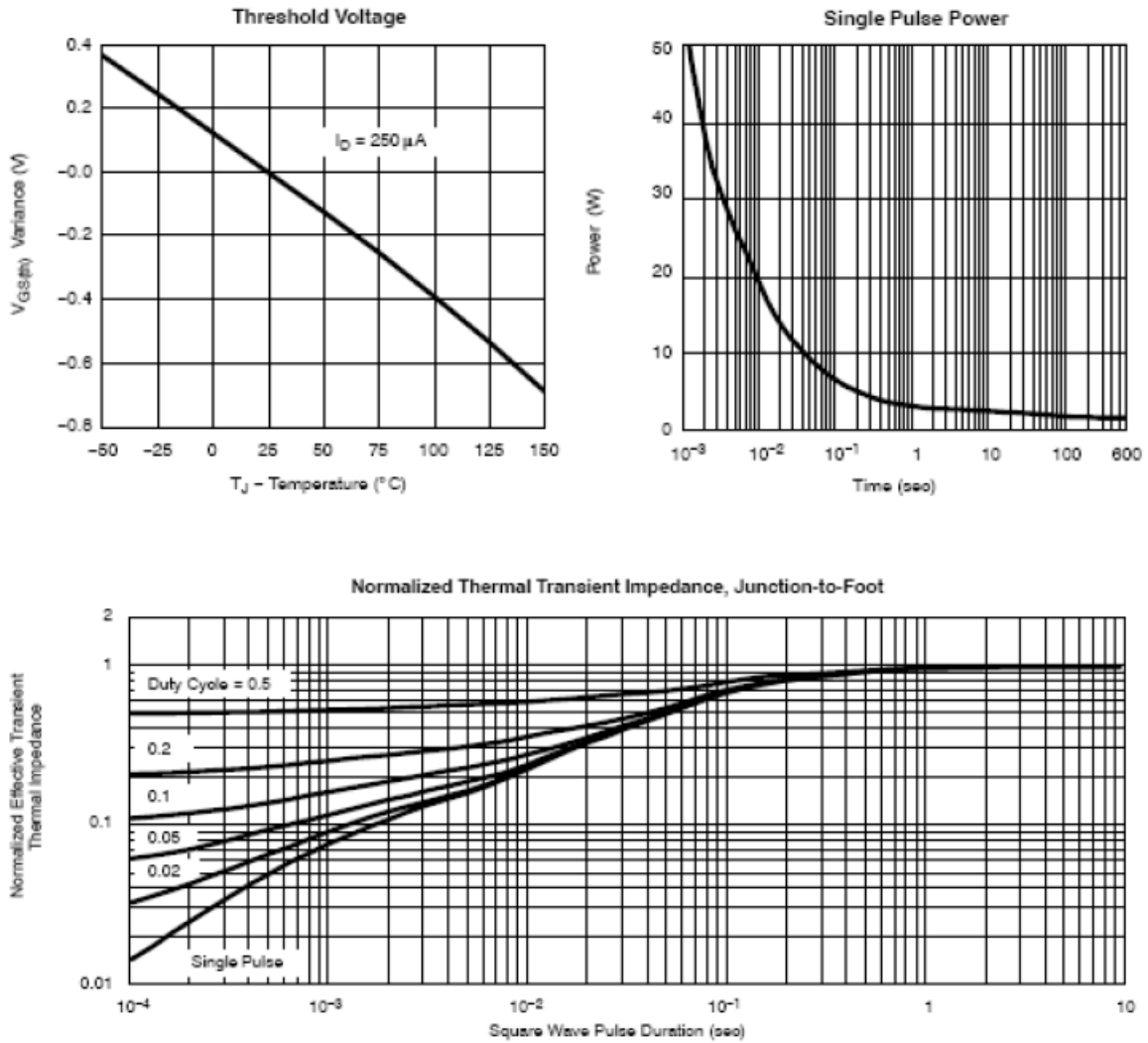
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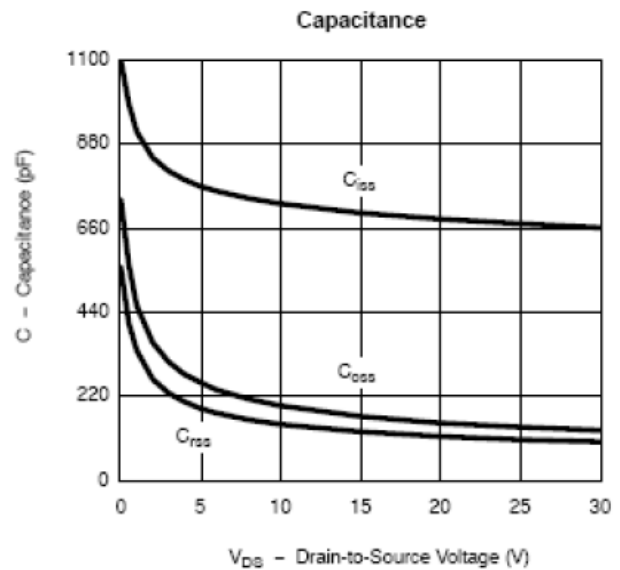
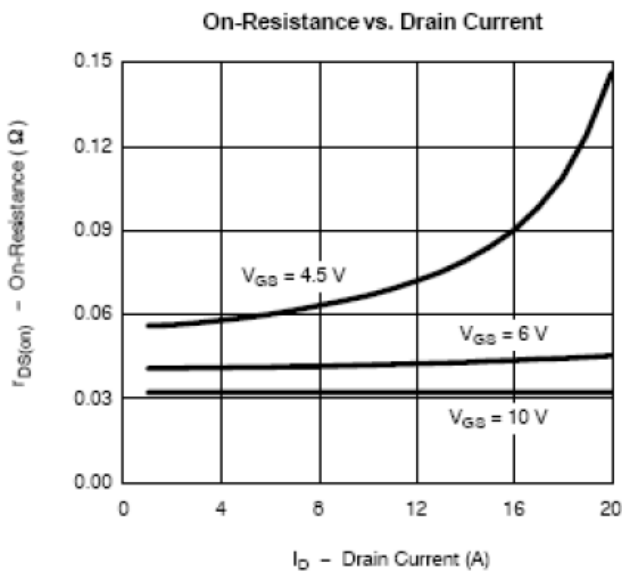
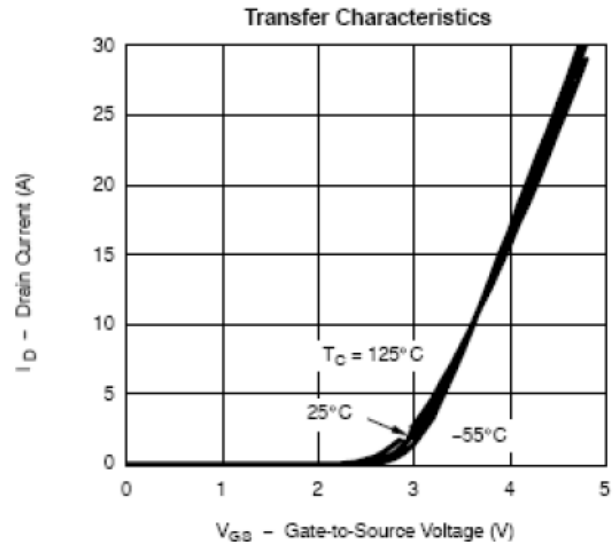
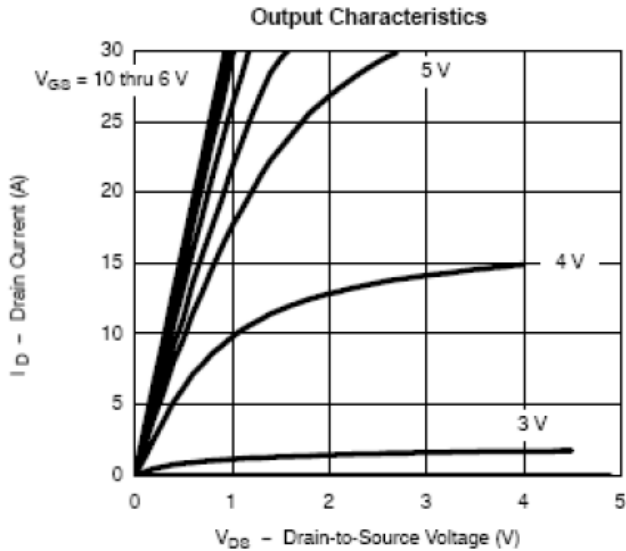
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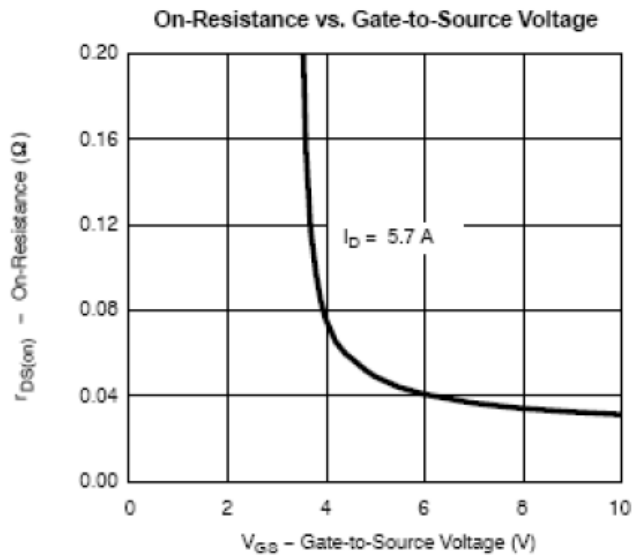
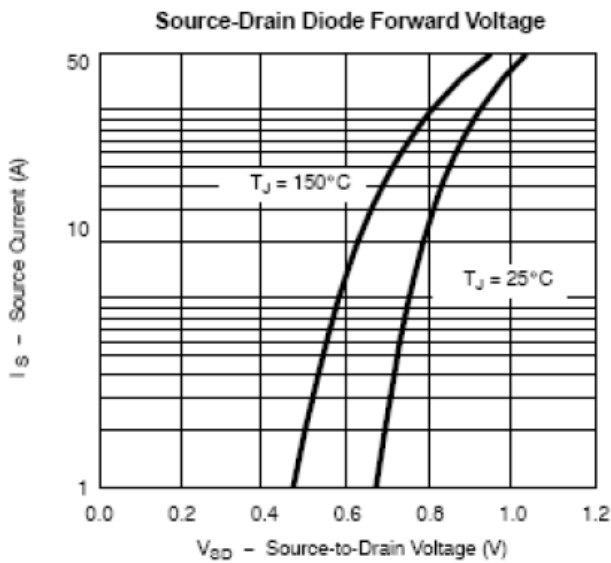
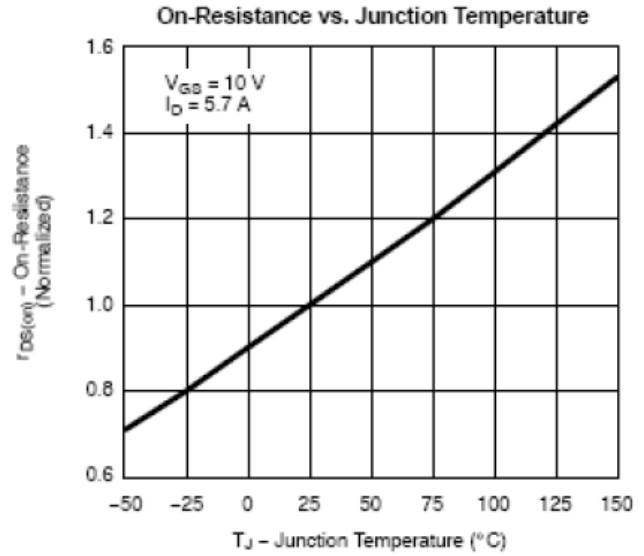
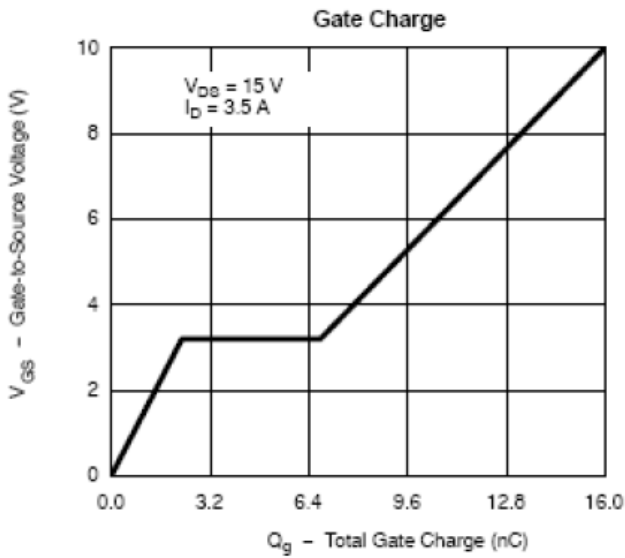




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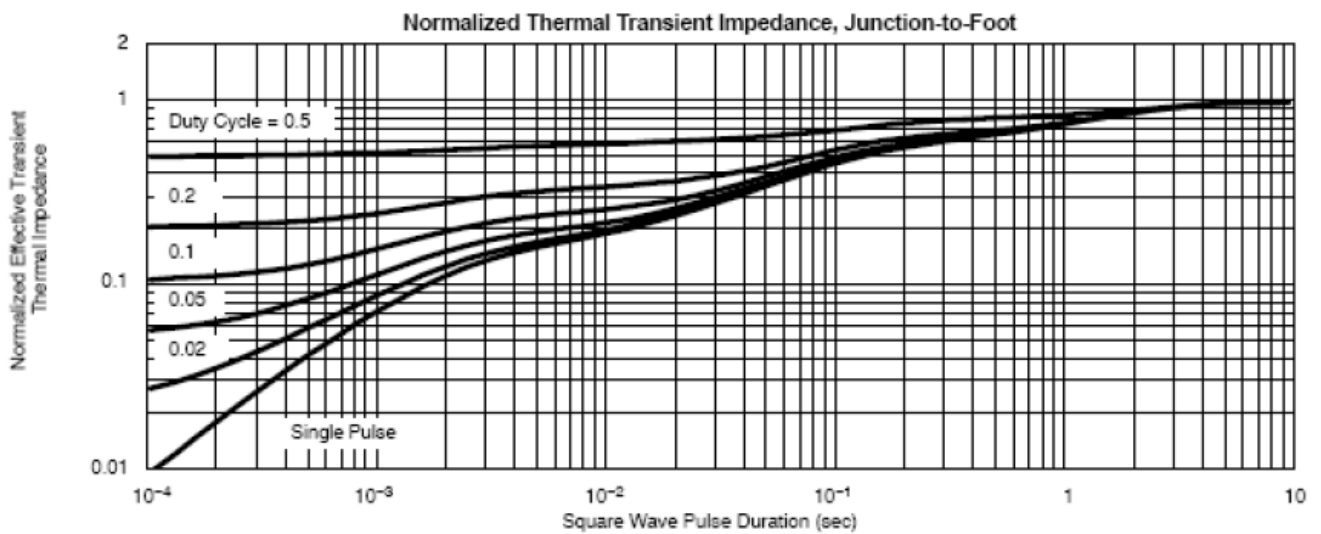
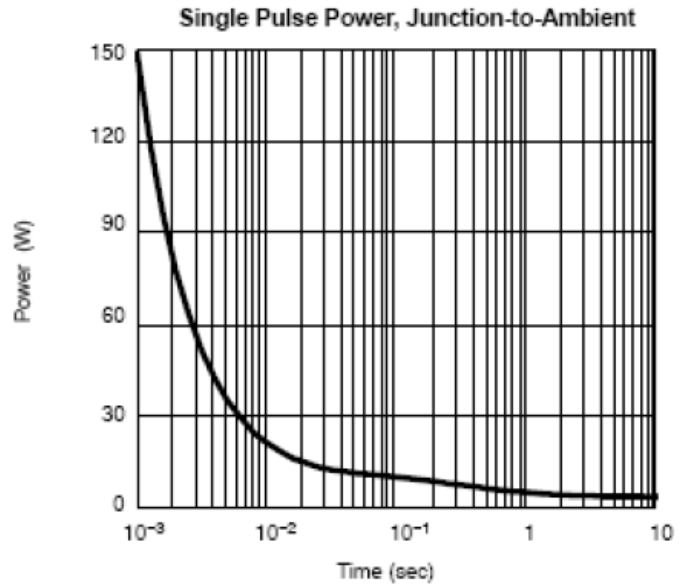
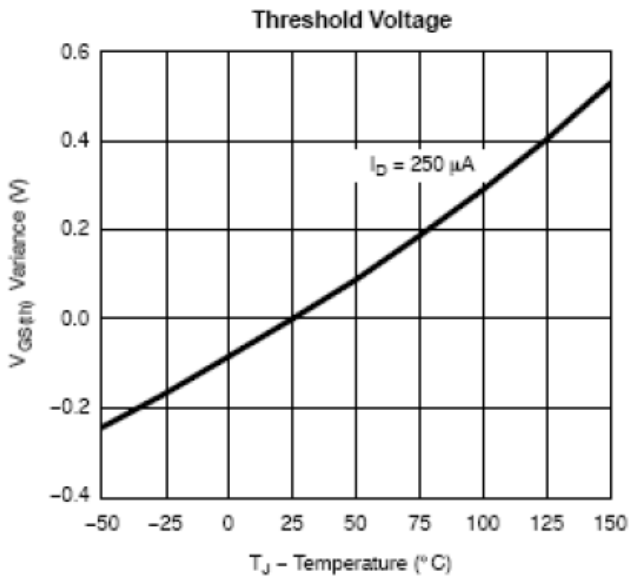
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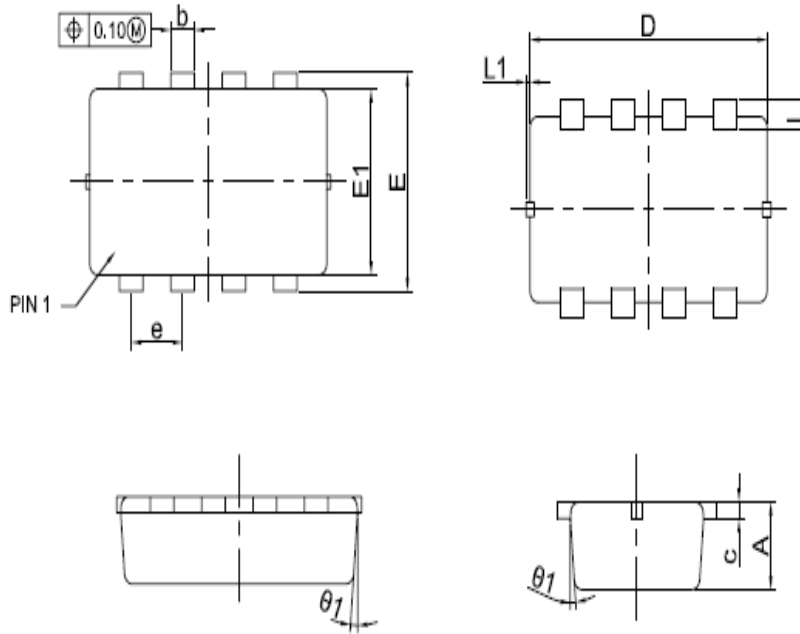




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PPAK3x2-8L PACKAGE OUTLINE



COMMON DIMENSIONS
(UNITS OF MEASURE=MILLIMETER)

SYMBOL	MIN	NOM	MAX
A	0,70	0,80	0,90
b	0,24	0,30	0,35
c	0,08	0,15	0,20
D	2,90	3,00	3,05
E	1,90	2,00	2,10
E1	1,60	1,70	1,75
e	0,65 BCS		
L	0,20	0,275	0,400
L1	0	—	0,100
θ1	0°	5°	8°



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