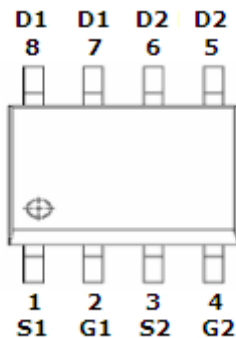
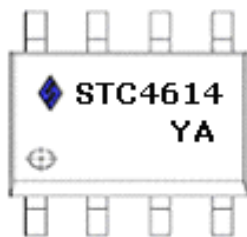


DESCRIPTION

The STC4614 is the N & P-Channel enhancement mode power field effect transistor using high cell density DMOS trench technology. This high density process is especially tailored to minimize on-state resistance and provide superior switching performance. This device is particularly suited for low voltage application such as notebook computer power management and other battery powered circuits, where high-side switching, low in-line power loss and resistance to transient are needed.

**PIN CONFIGURATION
SOP-8**

PART MARKING


Y: Year Code A: Process Code

FEATURE
N-Channel

- 40V/10A, $R_{DS(ON)} = 24m\Omega$ (Typ.)
@ $V_{GS} = 10V$
- 40V/8.0A, $R_{DS(ON)} = 30m\Omega$
@ $V_{GS} = 4.5V$
- 40V/6.0A, $R_{DS(ON)} = 36m\Omega$
@ $V_{GS} = 2.5V$

P-Channel

- -40V/-10A, $R_{DS(ON)} = 38m\Omega$ (Typ.)
@ $V_{GS} = -10V$
- -40V/-8.0A, $R_{DS(ON)} = 46m\Omega$
@ $V_{GS} = -4.5V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- SOP-8 package



STC4614 

N&P Pair Enhancement Mode MOSFET

10A / -10A

ABSOLUTE MAXIMUM RATINGS (Ta = 25°C Unless otherwise noted)

Parameter	Symbol	Typical		Unit
		N	P	
Drain-Source Voltage	V _{DSS}	40	-40	V
Gate-Source Voltage	V _{GSS}	±20	±20	V
Continuous Drain Current (T _J =150°C)	I _D	T _A =25°C 10.0	-10.0	A
		T _A =70°C 8.0	-8.0	
Pulsed Drain Current	I _{DM}	25	-25	A
Continuous Source Current (Diode Conduction)	I _S	2.3	-2.3	A
Power Dissipation	P _D	T _A =25°C 2.5	2.8	W
		T _A =70°C 1.6	1.8	
Operation Junction Temperature	T _J	-55/150		°C
Storage Temperature Range	T _{STG}	-55/150		°C
Thermal Resistance-Junction to Ambient	R _{θJA}	T ≤ 10Sec 50	52	°C/W
		Steady State 80	80	



STC4614 

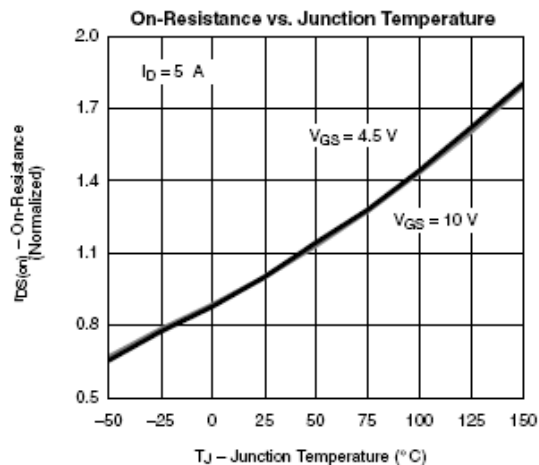
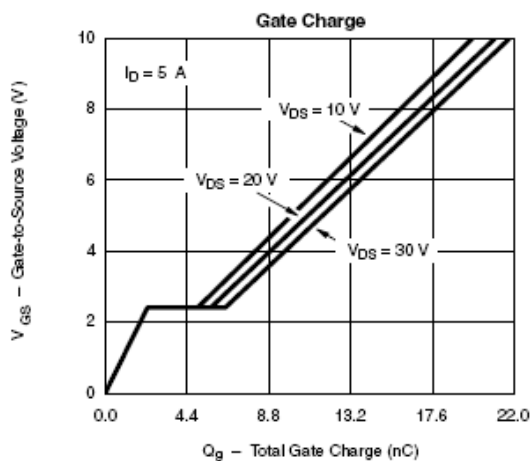
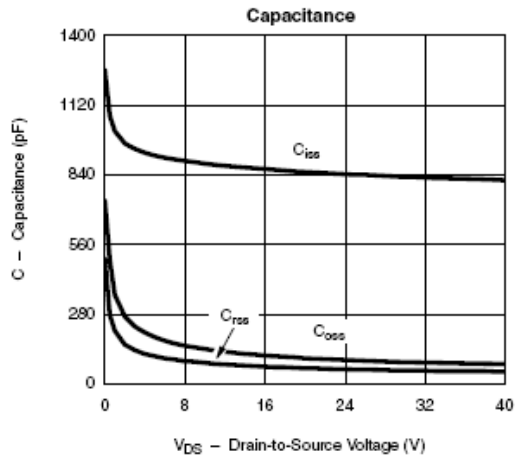
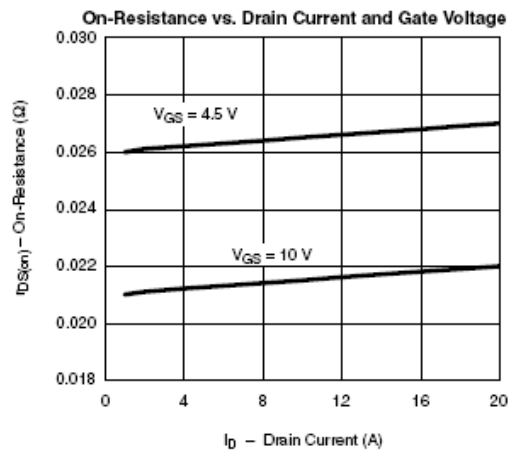
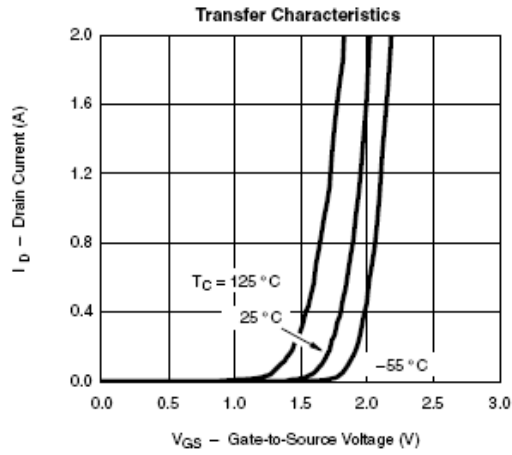
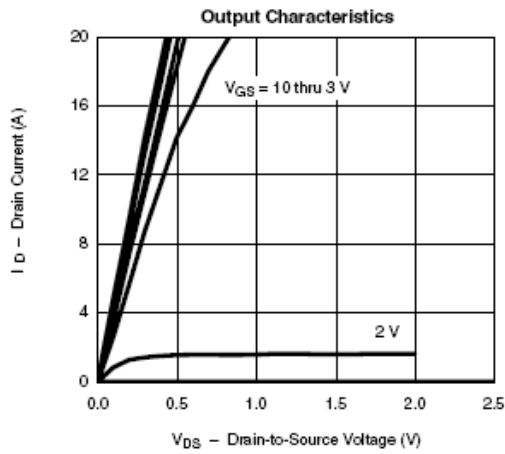
N&P Pair Enhancement Mode MOSFET

10A / -10A

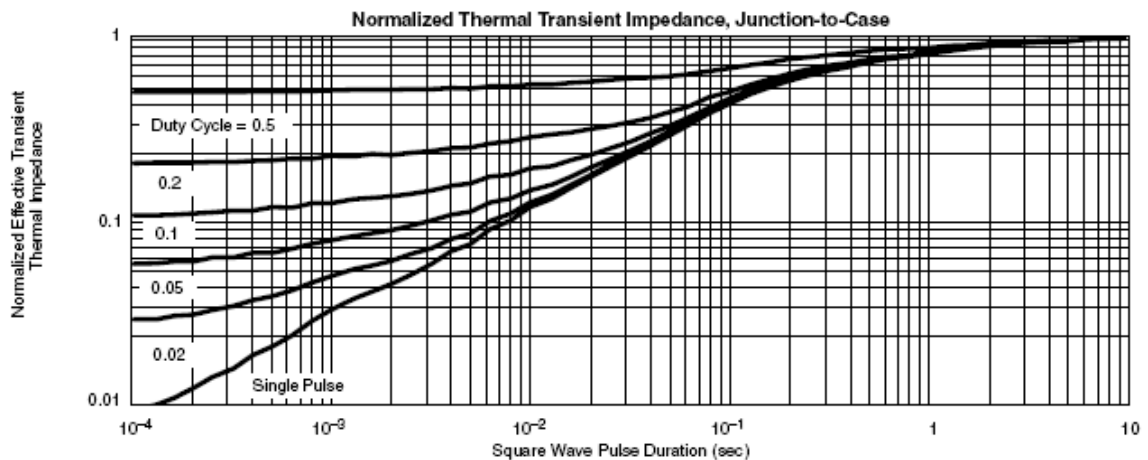
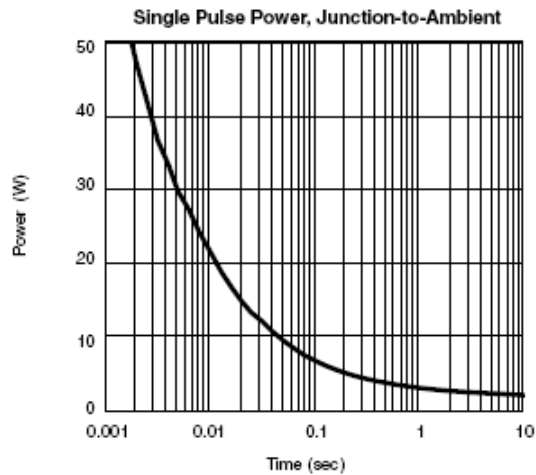
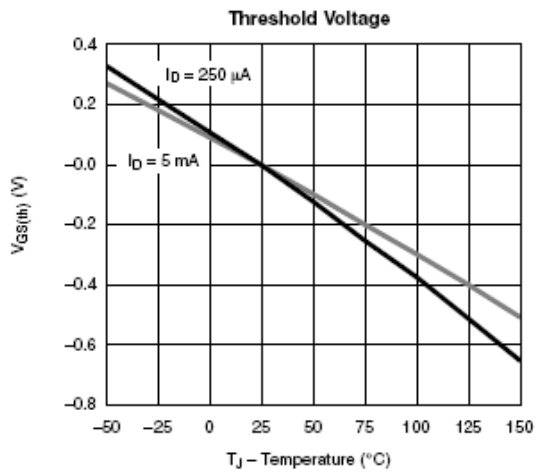
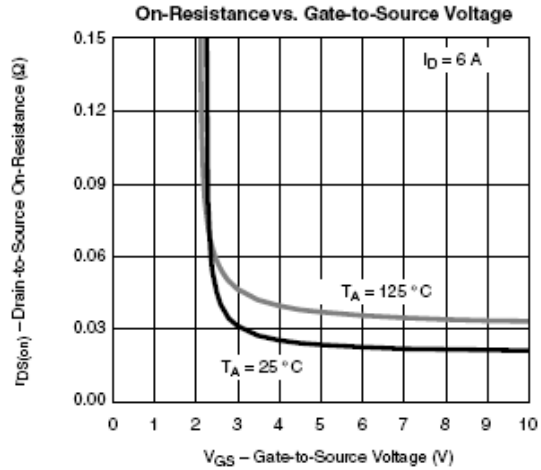
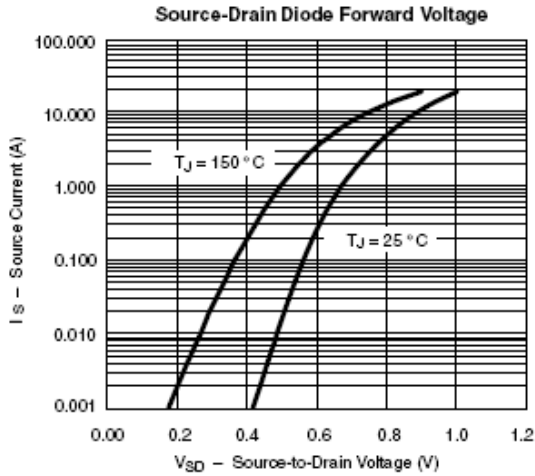
ELECTRICAL CHARACTERISTICS (Ta = 25°C Unless otherwise noted)

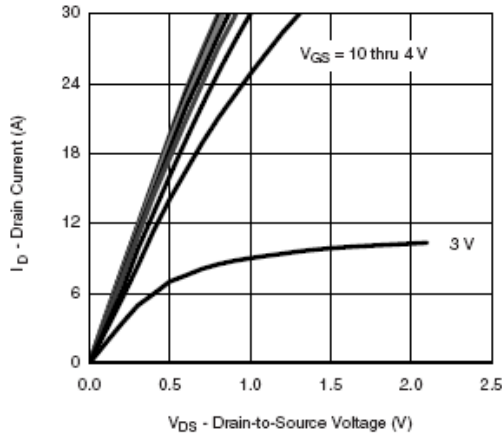
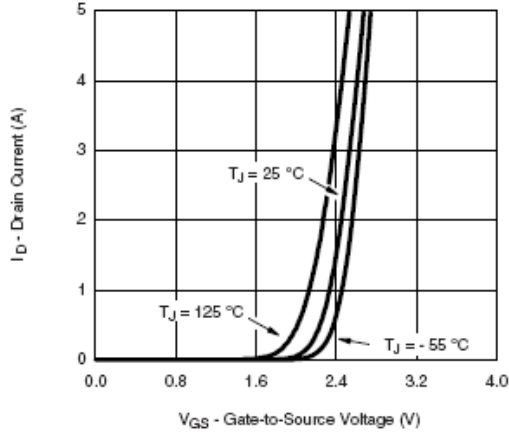
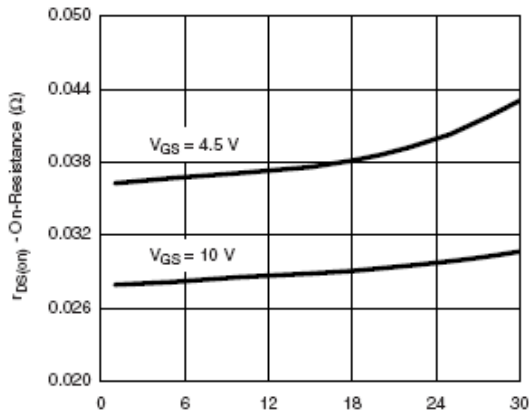
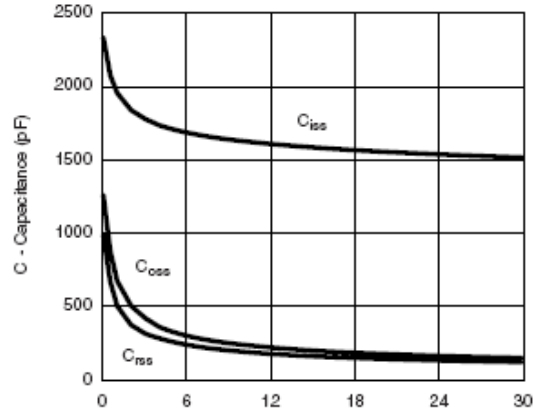
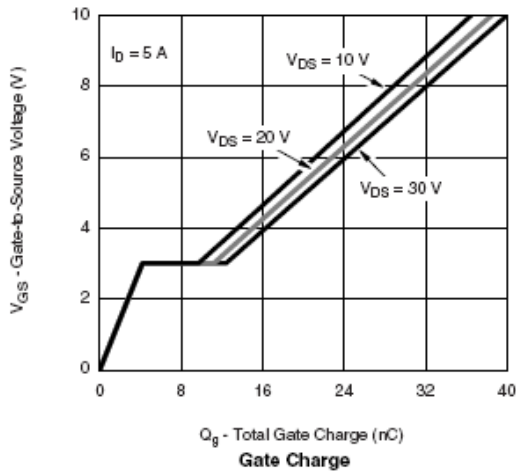
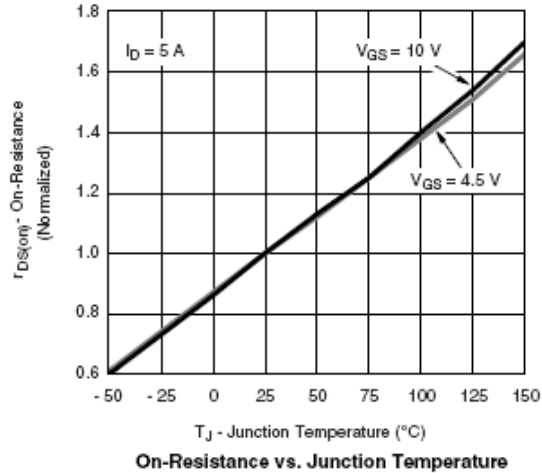
Parameter	Symbol	Condition	Min	Typ	Max	Unit		
Static								
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=10mA$	N	40		V		
		$V_{GS}=0V, I_D=-10mA$	P	-40				
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250 \mu A$	N	0.5	1.0	V		
		$V_{DS}=V_{GS}, I_D=-250\mu A$	P	-1.0	-3.0			
Gate Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 20V$	N		± 100	nA		
		$V_{DS}=0V, V_{GS}=\pm 20V$	P		± 100			
Zero Gate Voltage Drain Current	I_{DSS} $T_J=55^\circ C$	$V_{DS}=36V, V_{GS}=0V$	N		1	uA		
		$V_{DS}=-36V, V_{GS}=0V$	P		-1			
		$V_{DS}=32V, V_{GS}=0V$	N		10			
		$V_{DS}=-32V, V_{GS}=0V$	P		-10			
On-State Drain Current	$I_{D(on)}$	$V_{DS} \geq 5V, V_{GS}=10V$	N	10		A		
		$V_{DS} \leq -5V, V_{GS}=-10V$	P	-40				
Drain-source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=10A$	N		0.020	Ω		
		$V_{GS}=-10V, I_D=-7.2A$	P		0.022			
		$V_{GS}=4.5V, I_D=8.0A$	N		0.023			
		$V_{GS}=-4.5V, I_D=-5.6 A$	P		0.030			
Forward Tran Conductance	g_{fs}	$V_{DS}=15V, I_D=6.2A$	N		13	S		
		$V_{DS}=-10V, I_D=-9.0A$	P		24			
Diode Forward Voltage	V_{SD}	$I_S=2.3A, V_{GS}=0V$	N		0.8	V		
		$I_S=-2.3A, V_{GS}=0V$	P		-0.8			
Dynamic								
Total Gate Charge	Q_g	N-Channel $V_{DS}=20V, V_{GS}=4.5V$ $I_D \equiv 5.0A$	N		10	14	nC	
			P		16	24		
Gate-Source Charge	Q_{gs}	P-Channel $V_{DS}=-15V, V_{GS}=-10V$ $I_D \equiv -9.0A$	N		2.8			
			P		2.3			
Gate-Drain Charge	Q_{gd}		N		3.2			
			P		4.5			
Turn-On Time	$t_{d(on)}$ t_{tr}		N-Channel $V_{DS}=20V, R_L=4\Omega$ $I_D=5.0A, R_{GEN}=6\Omega$ $V_{GEN}=10V$	N		6	12	nS
				P		16	30	
		N			10	20		
		P			17	30		
Turn-Off Time	$t_{d(off)}$ t_f	P-Channel $V_{DS}=-15V, R_L=15\Omega$ $I_D=-1A, R_{GEN}=-6\Omega$ $V_{GEN}=10V$	N		20	36		
			P		65	110		
			N		6	12		
			P		35	80		

TYPICAL CHARACTERISTICS (N MOS)

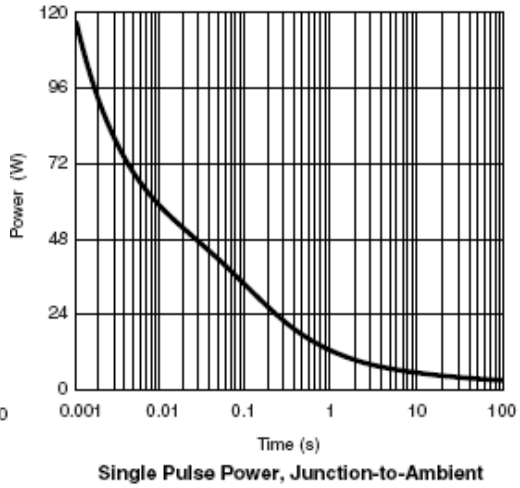
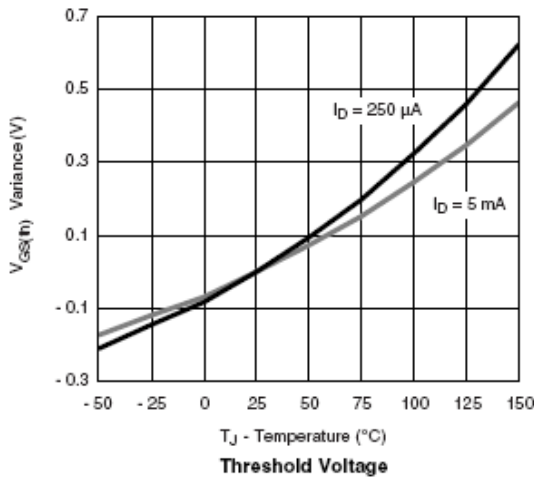
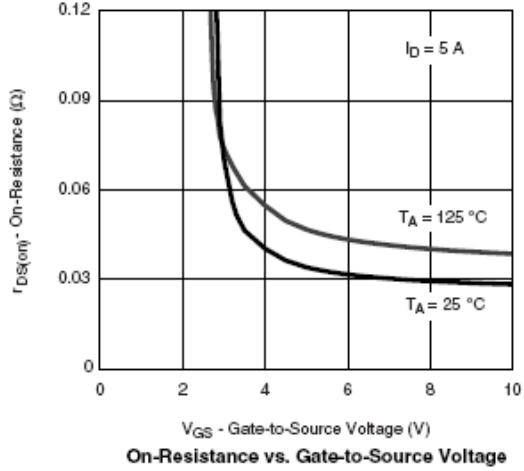
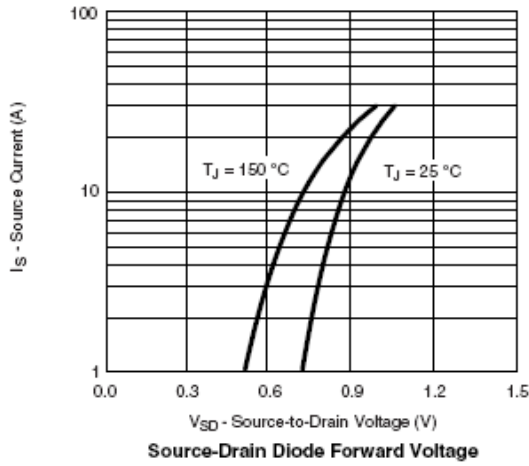


TYPICAL CHARACTERISTICS (N MOS)

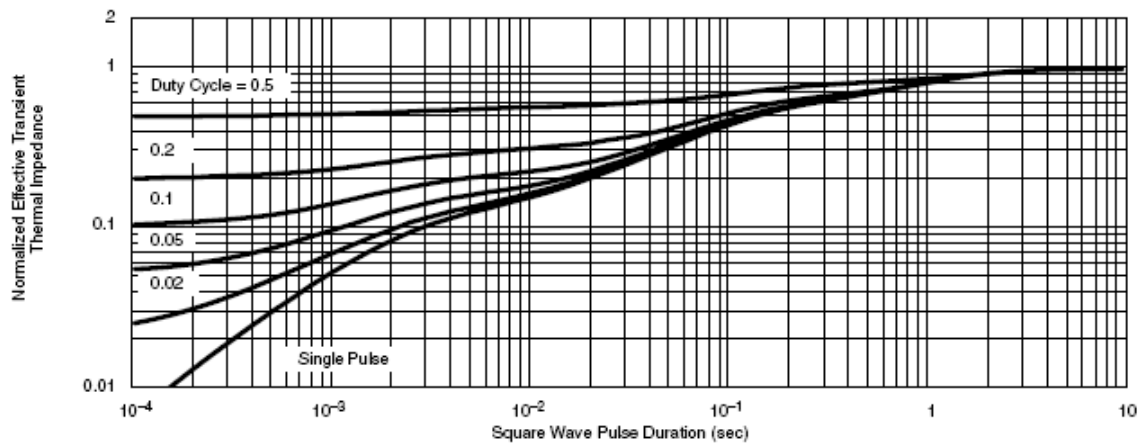


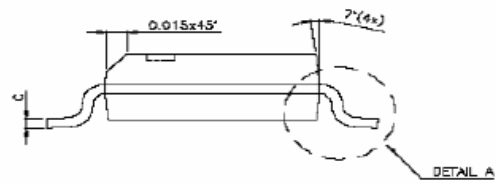
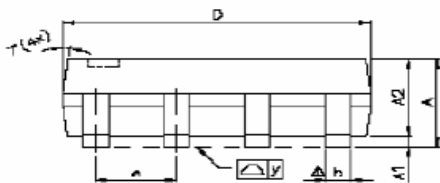
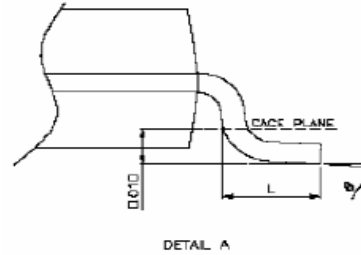
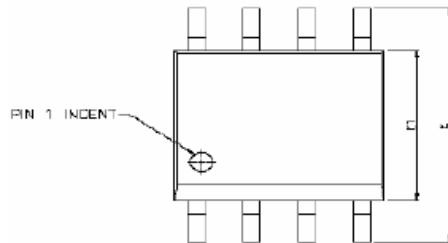
YPICAL CHARACTERISTICS (P MOS)

Output Characteristics

Transfer Characteristics

On-Resistance vs. Drain Current

Capacitance

Gate Charge

On-Resistance vs. Junction Temperature

TYPICAL CHARACTERISTICS (P MOS)



Normalized Thermal Transient Impedance, Junction-to-Foot



SOP-8 PACKAGE OUTLINE


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
Δ y	—	—	0.076	—	—	0.003
\varnothing	0°	—	8°	0°	—	8°