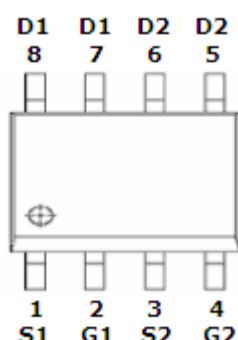


DESCRIPTION

The STC4539 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

SOP-8



S : Subcontractor Y : Year Code
A : Process Code

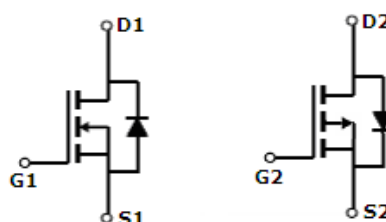
FEATURE

N-Channel

- 30V/6.8A, $R_{DS(ON)} = 34m\Omega$
@ $V_{GS} = 10V$
- 30V/5.6A, $R_{DS(ON)} = 46m\Omega$
@ $V_{GS} = 4.5V$

P-Channel

- -30V/-6.2A, $R_{DS(ON)} = 60m\Omega$
@ $V_{GS} = -10V$
- -30V/-4.6A, $R_{DS(ON)} = 80m\Omega$
@ $V_{GS} = -4.5V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- SOP-8 package



ORDERING INFORMATION

Part Number	Package	Part Marking
STC4539S8RG	SOP-8	STC4539
STC4539S8TG	SOP-8	STC4539

※ Process Code : A ~ Z ; a ~ z

※ STC4539S8RG S8 : SOP-8 ; R : Tape Reel ; G : Pb – Free

※ STC4539S8TG S8 : SOP-8 ; T : Tube ; G : Pb – Free



STC4539



N&P Pair Enhancement Mode MOSFET

6.8A / -6.2A

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

Parameter		Symbol	Typical N P		Unit
Drain-Source Voltage		V _{DSS}	30	-30	V
Gate-Source Voltage		V _{GSS}	±20	±20	V
Continuous Drain Current (T _J =150°C)	T _A =25°C T _A =70°C	I _D	6.8 5.6	-6.2 -4.6	A
Pulsed Drain Current		I _{DM}	30	-30	A
Continuous Source Current (Diode Conduction)		I _S	2.3	-2.3	A
Power Dissipation	T _A =25°C T _A =70°C	P _D	2.5 1.6	2.8 1.8	W
Operation Junction Temperature		T _J	150		°C
Storage Temperature Range		T _{STG}	-55/150		°C
Thermal Resistance-Junction to Ambient	T ≤ 10Sec Steady State	R _{θJA}	50 80	52 80	°C/W

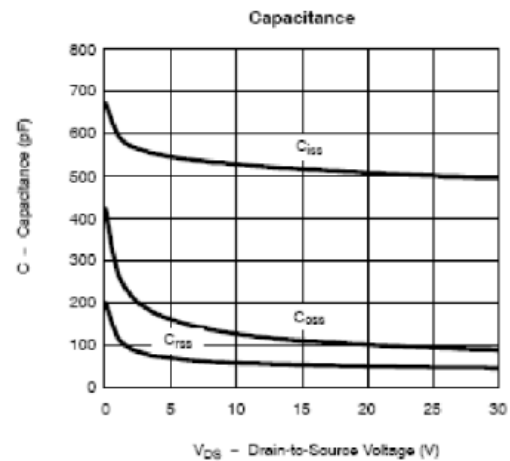
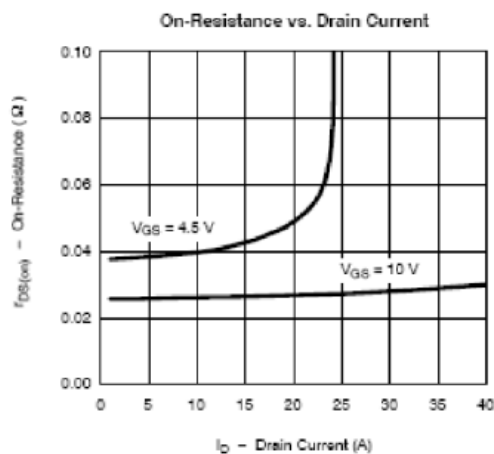
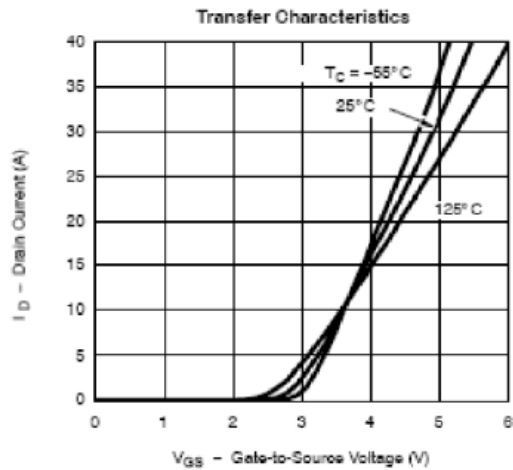
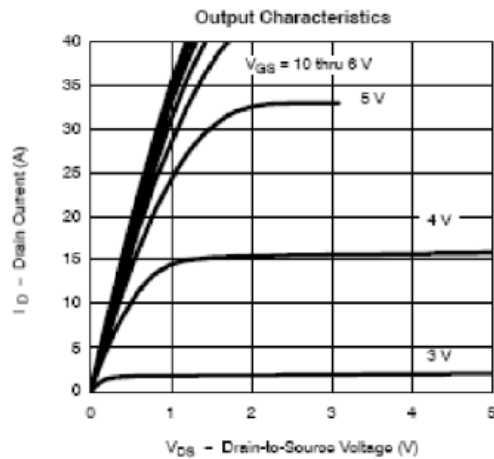

STC4539

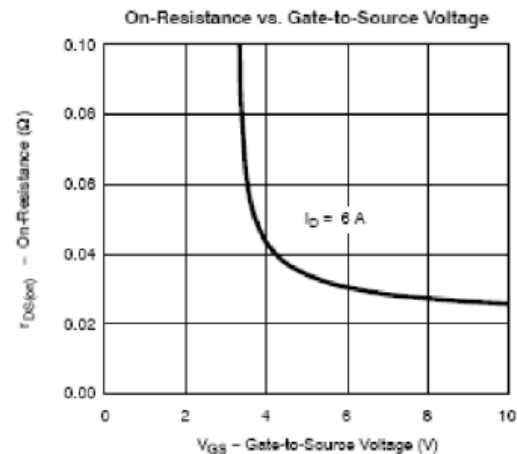
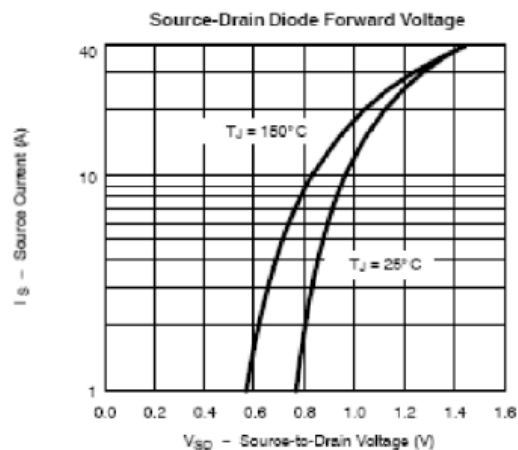
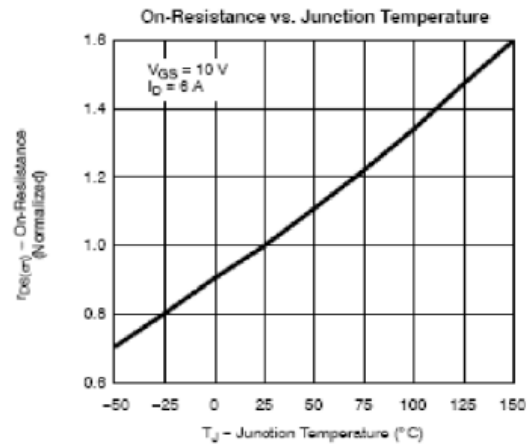
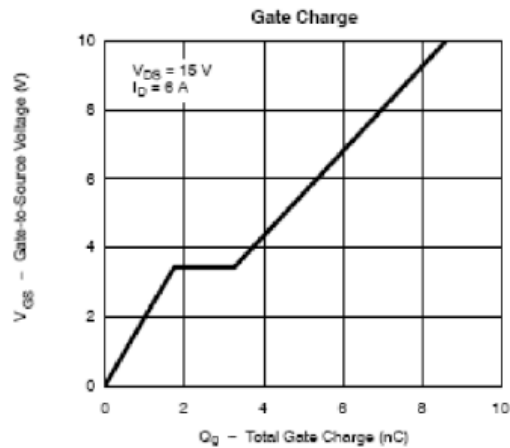

N&P Pair Enhancement Mode MOSFET

6.8A / -6.2A

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

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$ $V_{GS}=0V, I_D=-250\mu A$	N 30 P -30			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$ $V_{DS}=V_{GS}, I_D=-250\mu A$	N 1.0 P -1.0		3.0 -3.0	V
Gate Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 20V$ $V_{DS}=0V, V_{GS}=\pm 20V$	N P		± 100 ± 100	nA
Zero Gate Voltage Drain Current	I_{DSS} $T_J=55^\circ C$	$V_{DS}=24V, V_{GS}=0V$	N		1	uA
		$V_{DS}=-24V, V_{GS}=0V$	P		-1	
		$V_{DS}=24V, V_{GS}=0V$	N		5	
		$V_{DS}=-24V, V_{GS}=0V$	P		-5	
On-State Drain Current	$I_{D(on)}$	$V_{DS} \geq 5V, V_{GS}=10V$ $V_{DS} \leq -5V, V_{GS}=-10V$	N 30 P -30			A
Drain-source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=6.8A$	N	0.026	0.034	Ω
		$V_{GS}=-10V, I_D=-5.7A$	P	0.045	0.060	
		$V_{GS}=4.5V, I_D=5.6A$	N	0.036	0.045	
		$V_{GS}=-4.5V, I_D=-4.4A$	P	0.060	0.080	
Forward Tran Conductance	g_{fs}	$V_{DS}=15V, I_D=5.9A$ $V_{DS}=-15V, I_D=-5.9A$	N P	15 9		S
Diode Forward Voltage	V_{SD}	$I_S=1.7A, V_{GS}=0V$ $I_S=-1.7A, V_{GS}=0V$	N P	0.8 -0.8	1.2 -1.2	V
Dynamic						
Total Gate Charge	Q_g	N-Channel $V_{DS}=15V, V_{GS}=10V$ $I_D=5.9A$ P-Channel $V_{DS}=-15V, V_{GS}=-10V$ $I_D=5.0A$	N P	13 15	20 25	nC
Gate-Source Charge	Q_{gs}		N P	2.3 4.0		
Gate-Drain Charge	Q_{gd}		N P	2.0 2.0		
Turn-On Time	$t_{d(on)tr}$		N P N P	6.0 7.0 14 10	12 15 25 20	nS
Turn-Off Time	$t_{d(off)tf}$	N-Channel $V_{DD}=15V, R_L=150\Omega$ $I_D=1A, V_{GEN}=10V$ $R_G=6\Omega$ P-Channel $V_{DD}=-15V, R_L=150\Omega$ $I_D=-1A, V_{GEN}=-10V$ $R_G=6\Omega$	N P N P	30 40 5 20	60 80 10 40	

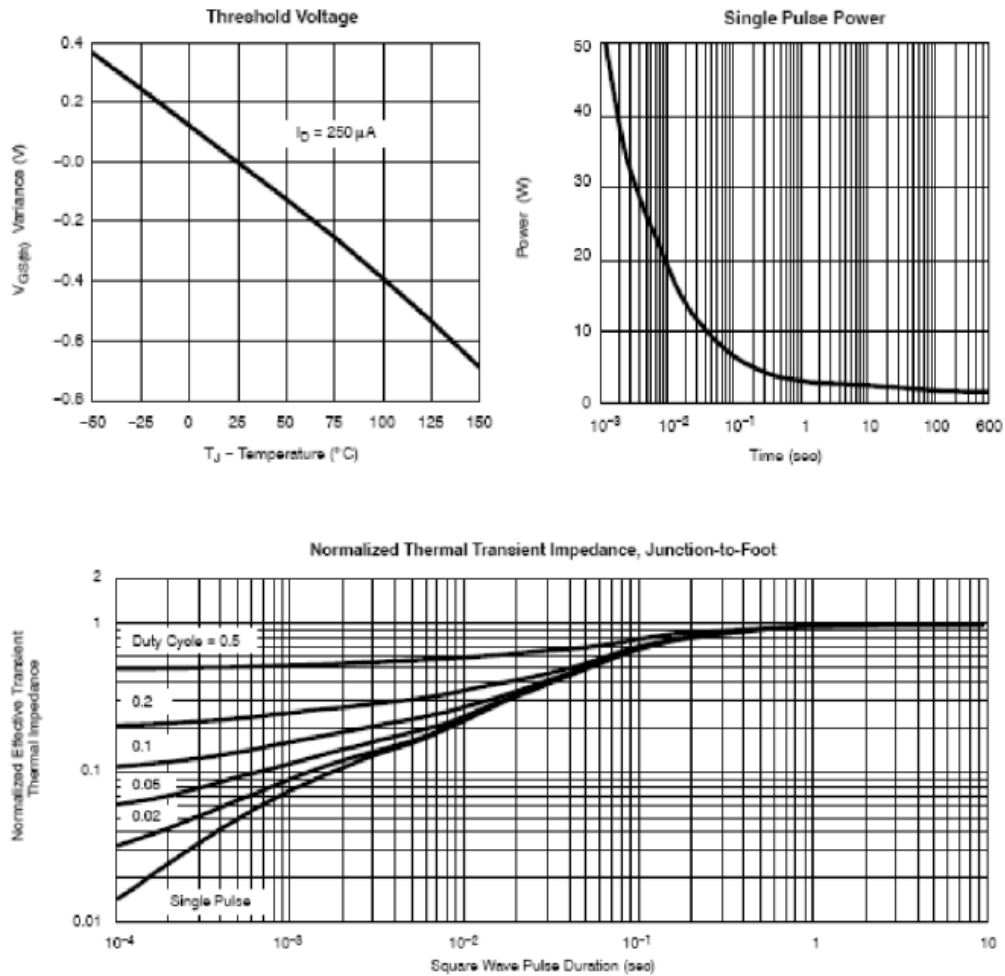
TYPICAL CHARACTERISTICS (N MOS)


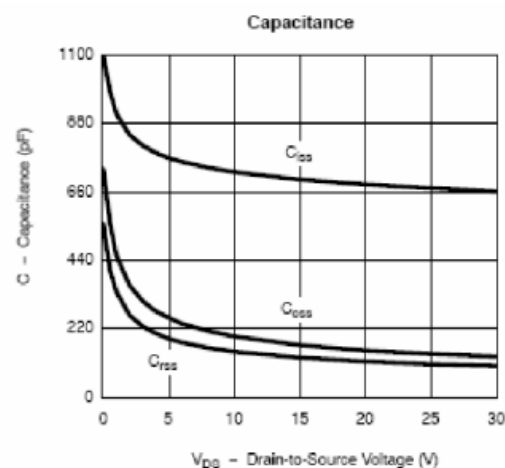
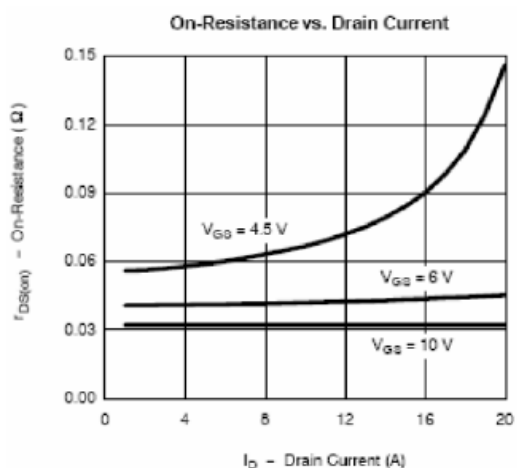
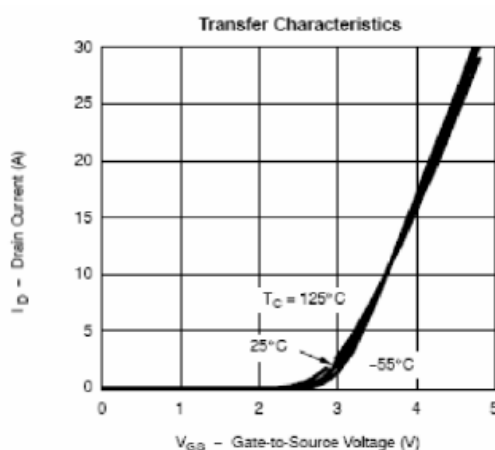
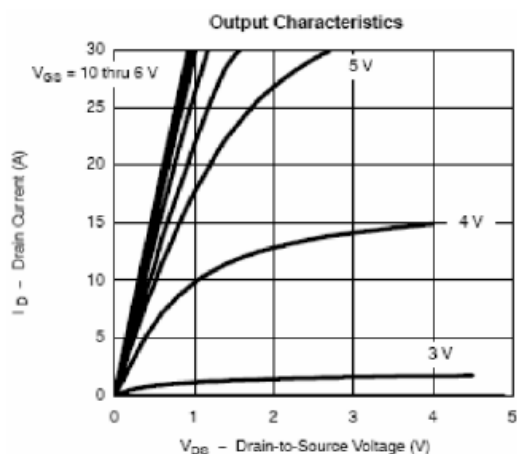
TYPICAL CHARACTERISTICS (N MOS)


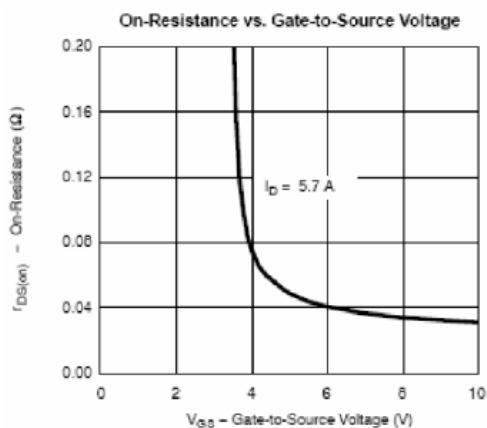
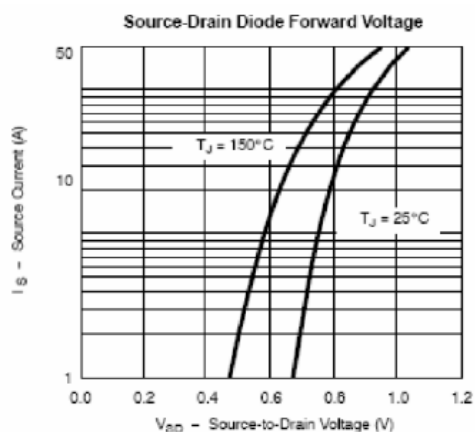
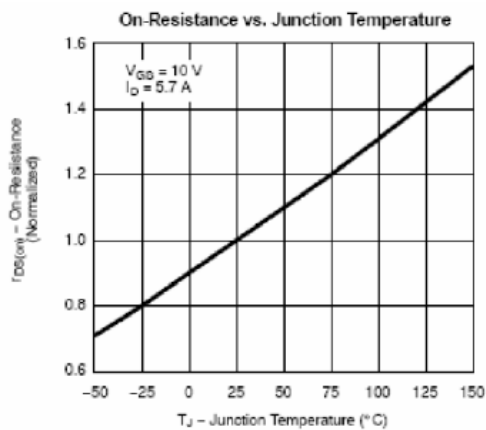
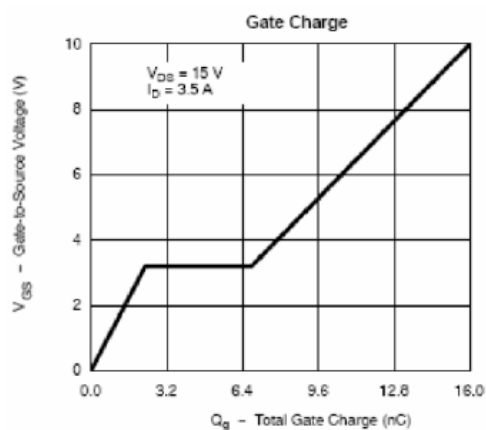
**STC4539**

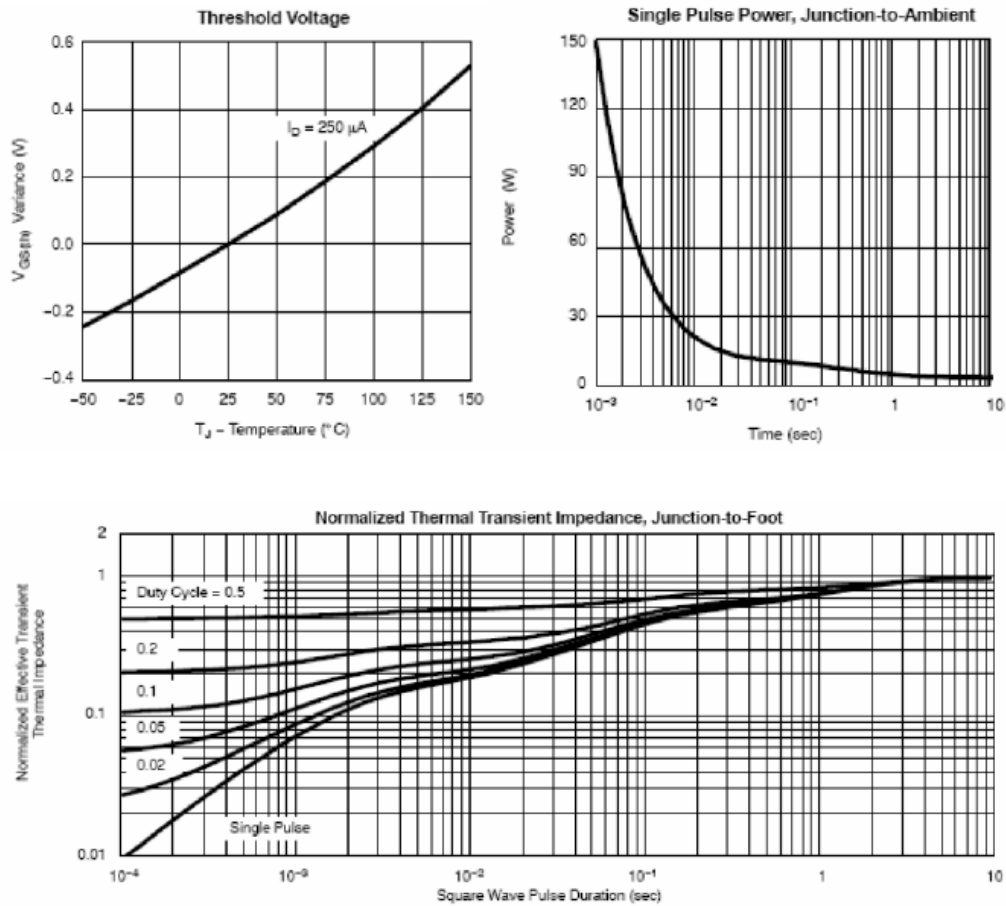
N&P Pair Enhancement Mode MOSFET

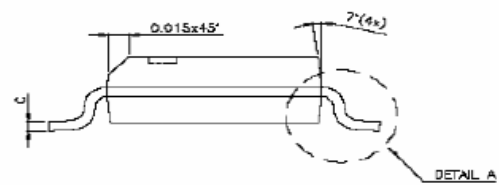
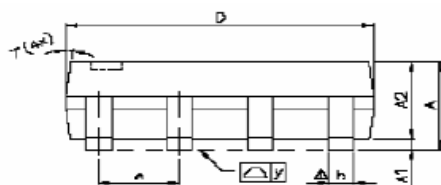
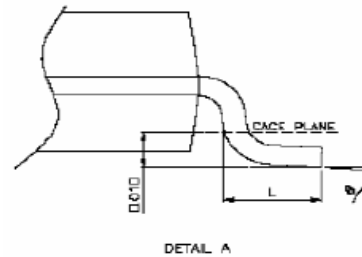
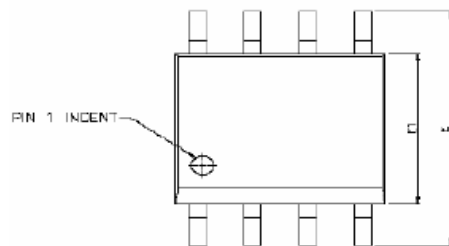
6.8A / -6.2A

TYPICAL CHARACTERISTICS (N MOS)

TYPICAL CHARACTERISTICS (P MOS)


TYPICAL CHARACTERISTICS (P MOS)


TYPICAL CHARACTERISTICS (P MOS)


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
Ø	0°	—	8°	0°	—	8°