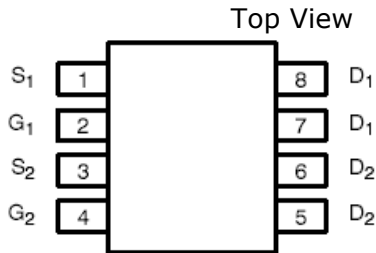
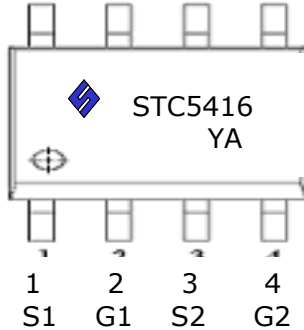


**DESCRIPTION**

STC4516 is the complementary 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.

**PIN CONFIGURATION**
**SOP-8**


8 7 6 5  
D1 D1 D2 D2



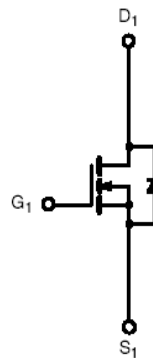
Y: Year Code A: Process Code

**FEATURE**
**P Channel**

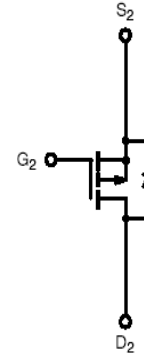
- -30V/-7.2A,  $R_{DS(ON)} = 22\text{m-ohm (Typ.)}$   
@ $V_{GS} = -10\text{V}$
- -30V/-5.6A,  $R_{DS(ON)} = 40\text{m-ohm}$   
@ $V_{GS} = -4.5\text{V}$

**N Channel**

- 30V/8.5A,  $R_{DS(ON)} = 10\text{m-ohm}$   
@ $V_{GS} = 10\text{V}$
- 30V/7.8A,  $R_{DS(ON)} = 16\text{m-ohm}$   
@ $V_{GS} = 4.5\text{V}$
- Super high density cell design for extremely low  $R_{DS(ON)}$
- SOP-8 package design



N-Channel MOSFET



P-Channel MOSFET

**ORDERING INFORMATION**

Part Number	Package	Part Marking
STC4516S8RG	SOP-8	STC4516
STC4516S8TG	SOP-8	STC4516

※ Process Code : A ~ Z ; a ~ z

※ STC4516S8RG S8 : SOP-8 ; R : Tape Reel ; G : Pb - Free


※ STC4516S8TG S8 : SOP-8 ; T : Tube ; G : Pb - Free

STANSON TECHNOLOGY

120 Bentley Square, Mountain View, Ca 94040 USA

<http://www.stansontech.com>



**STC4516**  Lead-free

Complementary Dual Enhancement Mode MOSFET

8.5A for N Channel / -7.2A for P Channl


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

<b>P-Channel</b>				
<b>Parameter</b>		<b>Symbol</b>	<b>Typical</b>	<b>Unit</b>
Drain-Source Voltage		V <sub>DSS</sub>	-30	V
Gate-Source Voltage		V <sub>GSS</sub>	+/-20	V
Continuous Drain Current	T <sub>A</sub> =25°C	I <sub>D</sub>	-7.2	A
	T <sub>A</sub> =70°C		-5.6	
Pulsed Drain Current		I <sub>DM</sub>	-20	A
Continuous Source Current (Diode Conduction)		I <sub>S</sub>	-2.3	A
Power Dissipation	T <sub>A</sub> =25°C	P <sub>D</sub>	2.8	W
	T <sub>A</sub> =70°C		1.8	
Operation 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>	80	°C/W

<b>N-Channel</b>				
<b>Parameter</b>		<b>Symbol</b>	<b>Typical</b>	<b>Unit</b>
Drain-Source Voltage		V <sub>DSS</sub>	30	V
Gate-Source Voltage		V <sub>GSS</sub>	+/-20	V
Continuous Drain Current	T <sub>A</sub> =25°C	I <sub>D</sub>	8.5	A
	T <sub>A</sub> =70°C		7.5	
Pulsed Drain Current		I <sub>DM</sub>	20	A
Continuous Source Current (Diode Conduction)		I <sub>S</sub>	2.3	A
Power Dissipation	T <sub>A</sub> =25°C	P <sub>D</sub>	2.5	W
	T <sub>A</sub> =100°C		1.6	
Operation 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>	80	°C/W

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**STC4516**  Lead-free


Complementary Dual Enhancement Mode MOSFET

8.5A for N Channel / -7.2A for P Channl

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

P-Channel						
Parameter	Symbol	Condition	Min	Typ	Max	Unit
<b>Static</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-30			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1.0		-3.0	V
Gate Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=+20V$			+100	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=-30V, V_{GS}=0V$			-1	uA
		$V_{DS}=-30V, V_{GS}=0V$ $T_J=55^\circ C$			-5	
On-State Drain Current	$I_{D(on)}$	$V_{DS}\geq -5V, V_{GS}=-10V$	-40			A
Drain-source On-Resistance	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-7.2A$		0.022		$\Omega$
		$V_{GS}=-4.5V, I_D=-5.6A$		0.030		
Forward Transconductance	$g_{fs}$	$V_{DS}=-10V, I_D=-7.2A$		24		S
Diode Forward Voltage	$V_{SD}$	$I_S=-2.3A, V_{GS}=0V$		-0.8	-1.2	V
<b>Dynamic</b>						
Total Gate Charge	$Q_g$	$V_{DS}=-15V, V_{GS}=-10V$ $I_D=-7.2A$		16		nC
Gate-Source Charge	$Q_{gs}$			23		
Gate-Drain Charge	$Q_{gd}$			4.5		
Input Capacitance	$C_{iss}$	$V_{DS}=-15V, V_{GS}=0V$ $f=1MHz$		1650		pF
Output Capacitance	$C_{oss}$			350		
Reverse Transfer Capacitance	$C_{rss}$			235		
Turn-On Time	$T_{d(on)}$ $t_r$	$V_{DD}=-15V, R_L=15\Omega$ $I_D=-1A, V_{GEN}=-10V$ $RG=6\Omega$		16	30	nS
				17	30	
Turn-Off Time	$T_{d(off)}$ $t_f$			65	110	
				35	80	



**STC4516** 

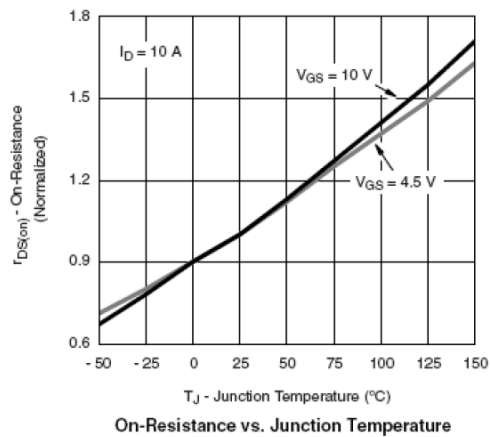
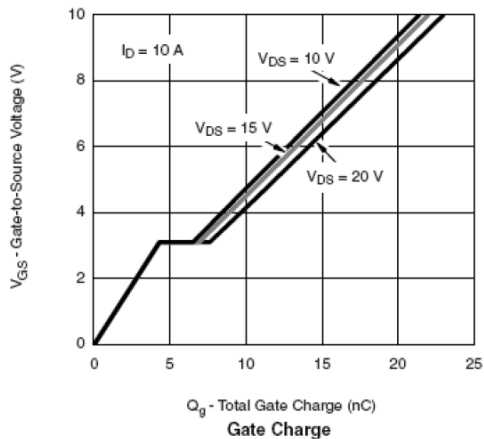
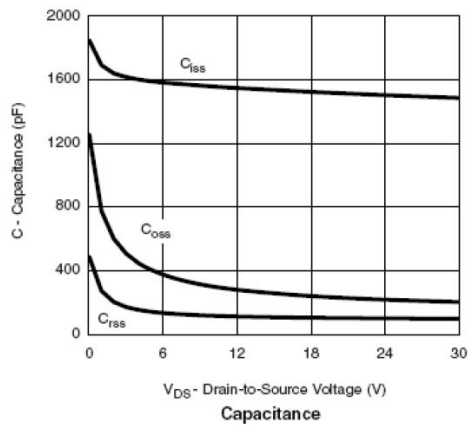
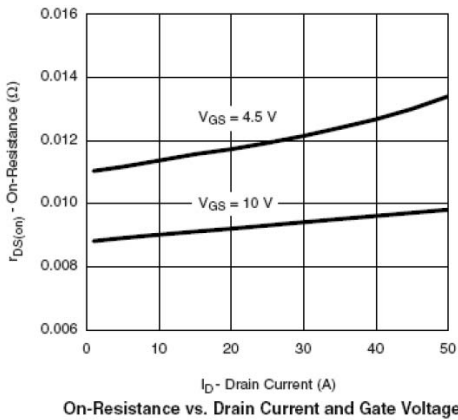
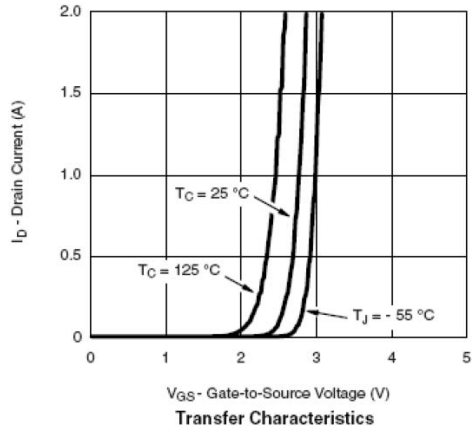
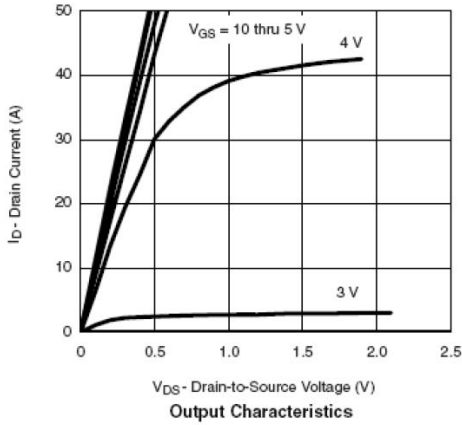
Complementary Dual Enhancement Mode MOSFET

8.5A for N Channel / -7.2A for P Channl

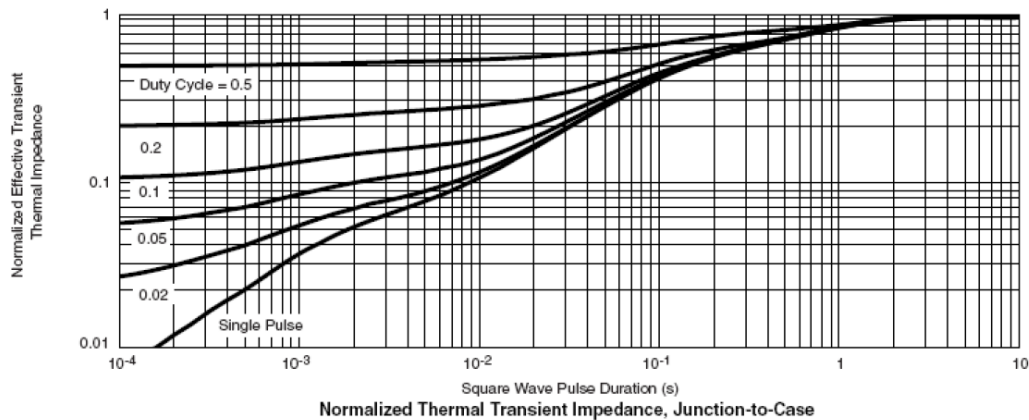
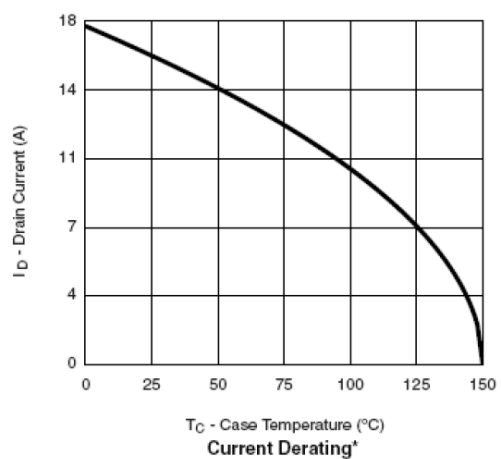
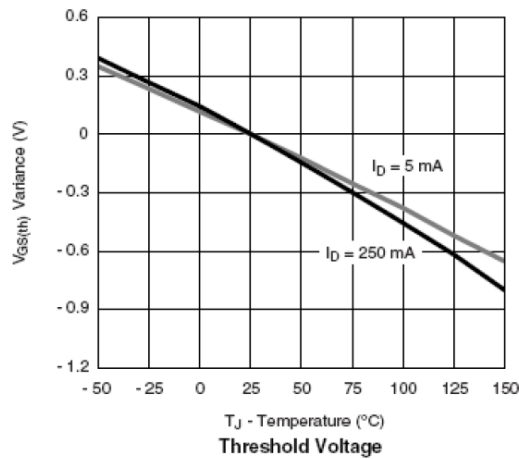
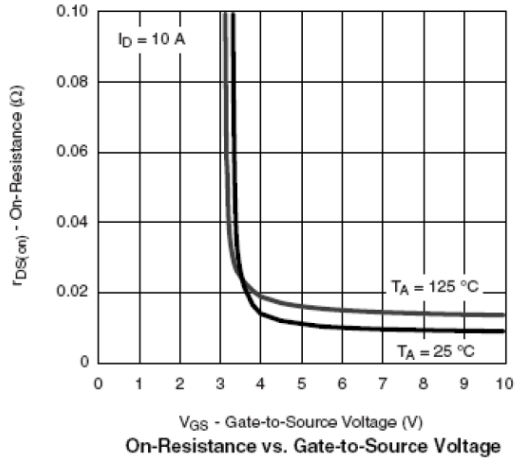
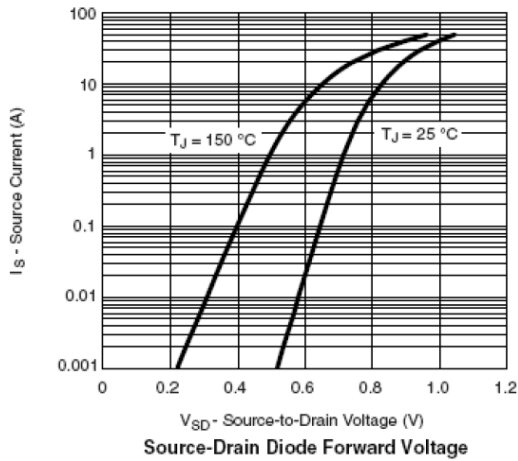
**ELECTRICAL CHARACTERISTICS** ( Ta = 25°C Unless otherwise noted )

N-Channel						
Parameter	Symbol	Condition	Min	Typ	Max	Unit
<b>Static</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	30			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.0		3.0	V
Gate Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 20V$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=24V, V_{GS}=0V$			1	uA
		$V_{DS}=24V, V_{GS}=0V$ $T_J=55^\circ C$			5	
On-State Drain Current	$I_{D(on)}$	$V_{DS} \geq 5V, V_{GS}=10V$	25			A
Drain-source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=8.5A$ $V_{GS}=4.5V, I_D=7.8A$		0.010 0.013		$\Omega$
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	$Q_g$	$V_{DS}=15V, V_{GS}=10V$ $I_D=2A$		16	24	nC
Gate-Source Charge	$Q_{gs}$			4.2		
Gate-Drain Charge	$Q_{gd}$			2.5		
Input Capacitance	$C_{iss}$	$V_{DS}=15V, V_{GS}=0V$ $f=1MHz$		1350		pF
Output Capacitance	$C_{oss}$			258		
Reverse Transfer Capacitance	$C_{rss}$			150		
Turn-On Time	$T_{d(on)}$ $t_r$	$V_{DD}=15V, R_L=15\Omega$ $I_D=5.0A, V_{GEN}=10V$ $R_G=1\Omega$		15	20	nS
Turn-Off Time	$T_{d(off)}$ $t_f$			6	16	
				20	40	
				12	20	

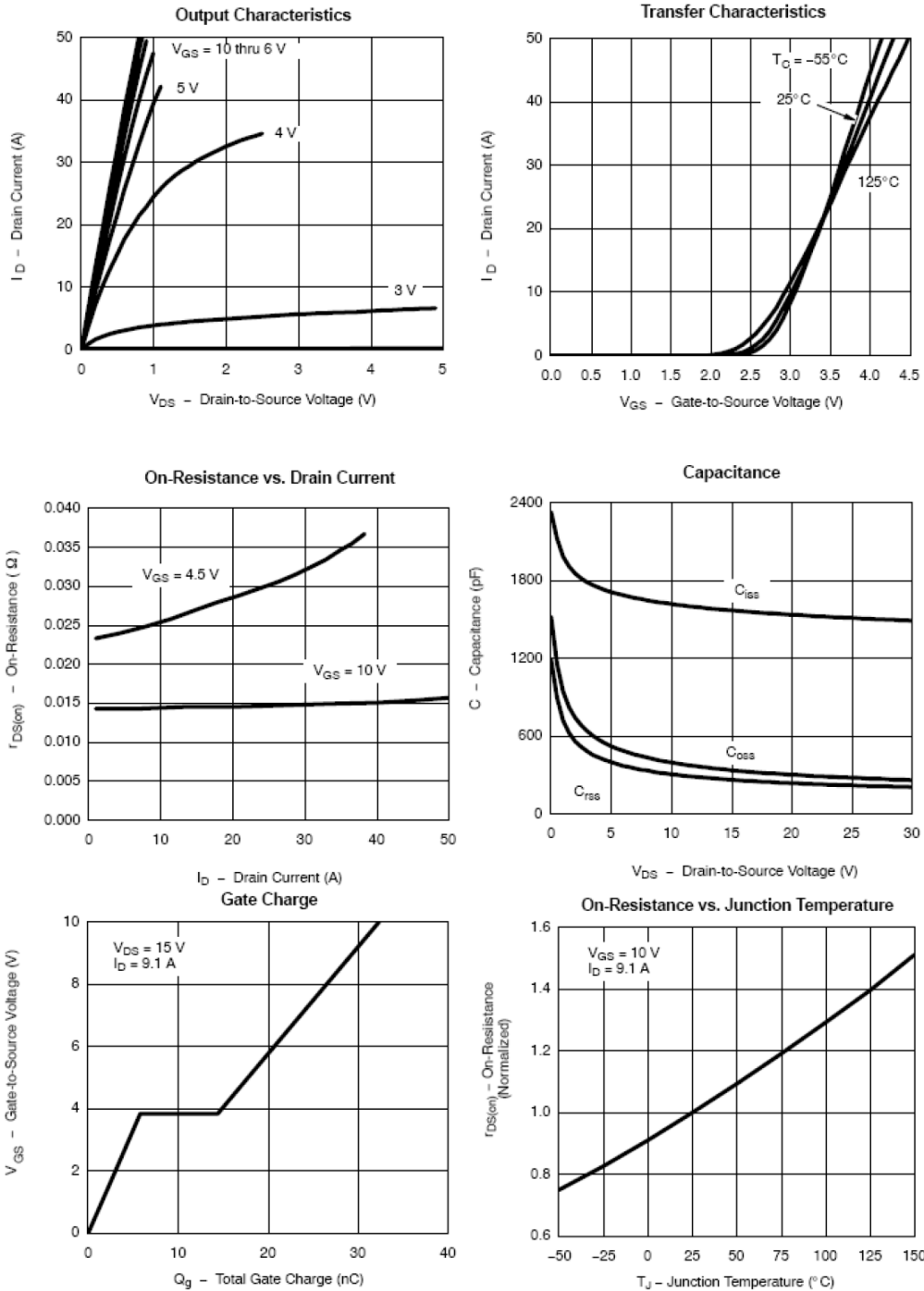
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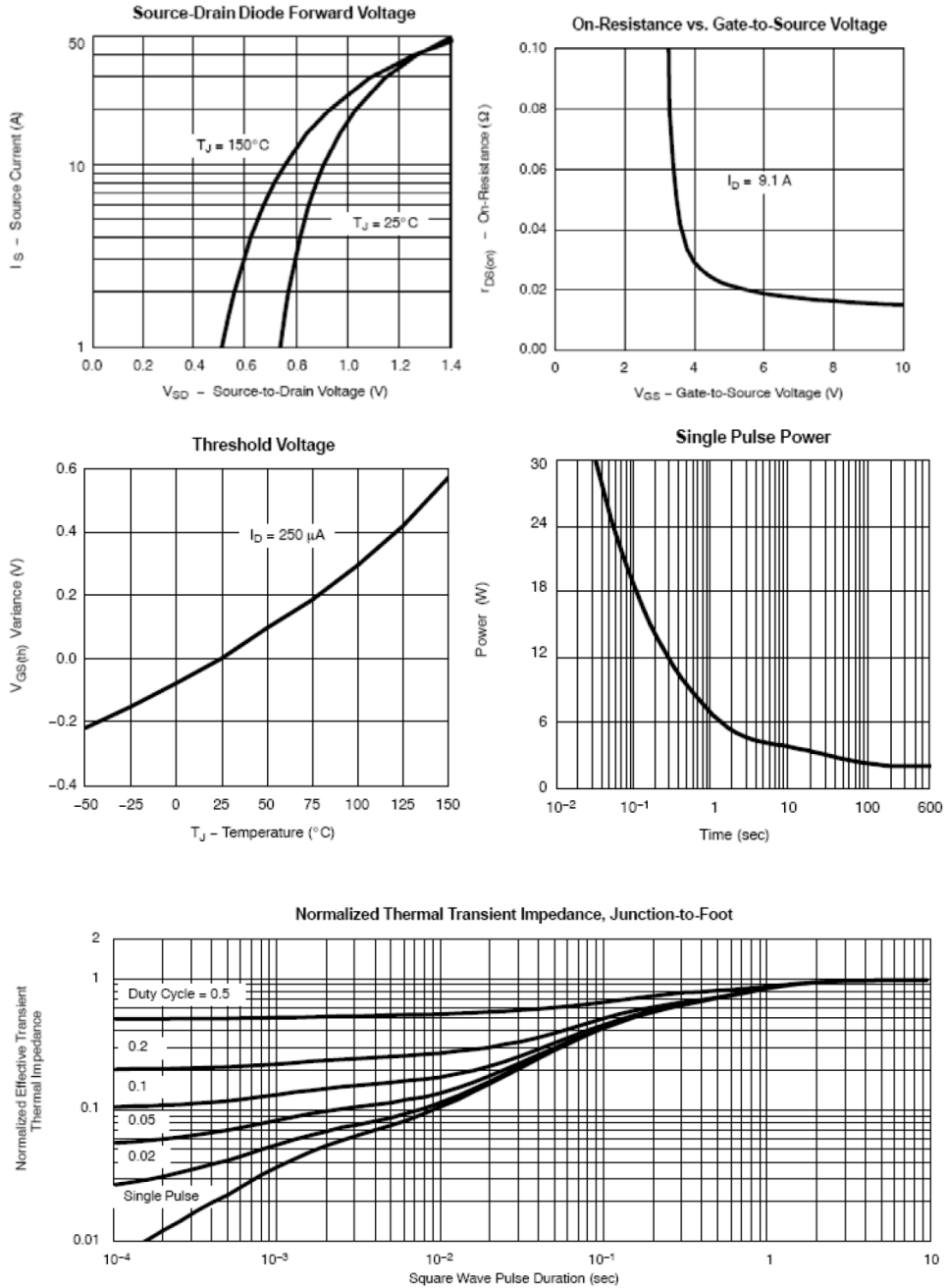
**TYPICAL CHARACHTERISTICS (N MOS)**



**TYPICAL CHARACHTERISTICS (P MOS)**



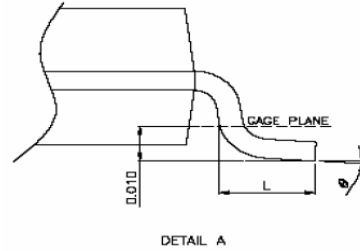
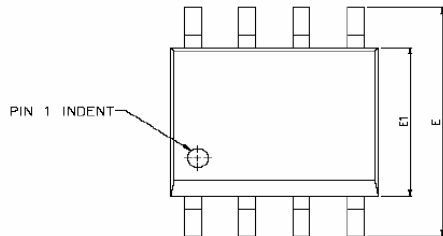
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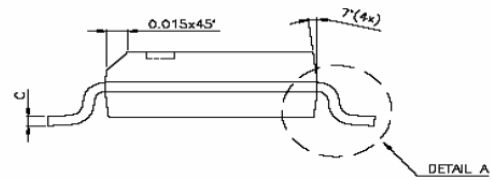
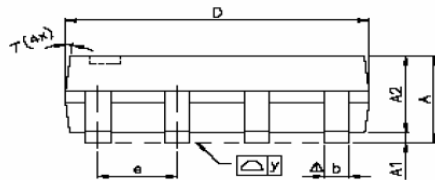


8.5A for N Channel / -7.2A for P Channl

**SOP-8 PACKAGE OUTLINE**



DETAIL A



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
$\phi$	0°	—	8°	0°	—	8°