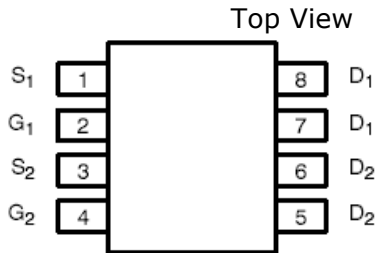


DESCRIPTION

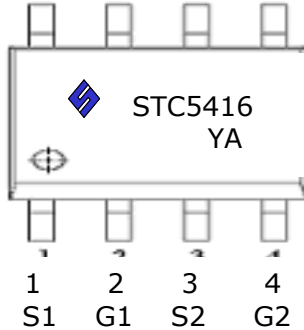
STC4516 is the complementary enhancement mode power field effect transistor using high cell density, DMOS trench technology. This high density process is especially tailored to minimize on-state resistance.

PIN CONFIGURATION

SOP-8



8 7 6 5
D1 D1 D2 D2



Y: Year Code A: Process Code

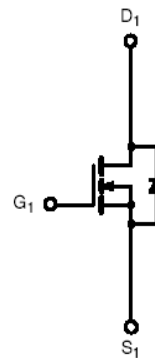
FEATURE

P Channel

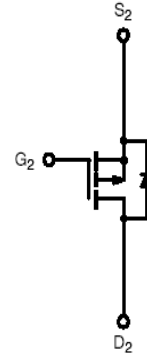
- -30V/-7.2A, $R_{DS(ON)} = 22\text{m-ohm}$ (Typ.) @ $V_{GS} = -10\text{V}$
- -30V/-5.6A, $R_{DS(ON)} = 40\text{m-ohm}$ @ $V_{GS} = -4.5\text{V}$

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

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**STC4516**

Complementary Dual Enhancement Mode MOSFET

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

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

P-Channel				
Parameter		Symbol	Typical	Unit
Drain-Source Voltage		V _{DSS}	-30	V
Gate-Source Voltage		V _{GSS}	+/-20	V
Continuous Drain Current	T _A =25°C	I _D	-7.2	A
	T _A =70°C		-5.6	
Pulsed Drain Current		I _{DM}	-20	A
Continuous Source Current (Diode Conduction)		I _S	-2.3	A
Power Dissipation	T _A =25°C	P _D	2.8	W
	T _A =70°C		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}	80	°C/W

N-Channel				
Parameter		Symbol	Typical	Unit
Drain-Source Voltage		V _{DSS}	30	V
Gate-Source Voltage		V _{GSS}	+/-20	V
Continuous Drain Current	T _A =25°C	I _D	8.5	A
	T _A =70°C		7.5	
Pulsed Drain Current		I _{DM}	20	A
Continuous Source Current (Diode Conduction)		I _S	2.3	A
Power Dissipation	T _A =25°C	P _D	2.5	W
	T _A =100°C		1.6	
Operation Junction Temperature		T _J	-55/150	°C
Storage Temperature Range		T _{STG}	-55/150	°C
Thermal Resistance-Junction to Ambient		R _{θJA}	80	°C/W

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

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

P-Channel						
Parameter	Symbol	Condition	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	-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℃			-5	
On-State Drain Current	I _{D(on)}	V _{DS} ≥-5V,V _{GS} =-10V	-40			A
Drain-source On-Resistance	R _{DS(on)}	V _{GS} =-10V,I _D =-7.2A V _{GS} =-4.5V,I _D =-5.6A		0.022 0.030		Ω
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
Dynamic						
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 =15Ω I _D =-1A,V _{GEN} =-10V R _G =6Ω		16	30	nS
				17	30	
Turn-Off Time	T _{d(off)} t _f			65	110	
				35	80	

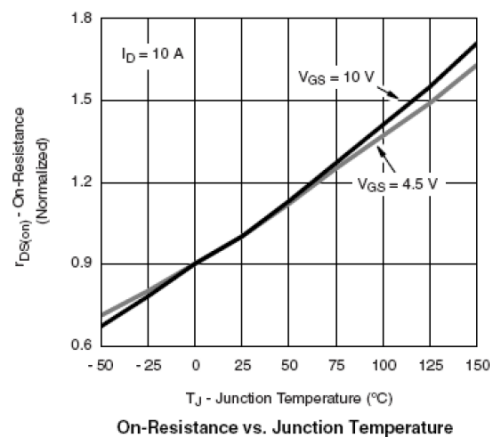
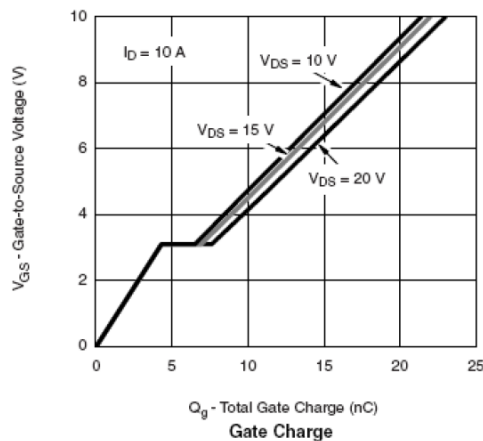
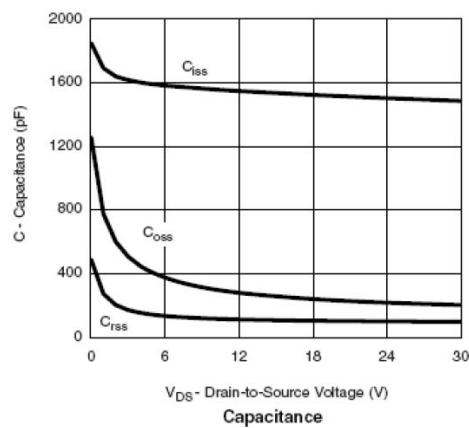
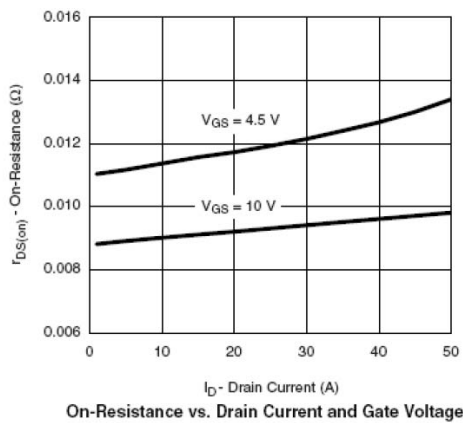
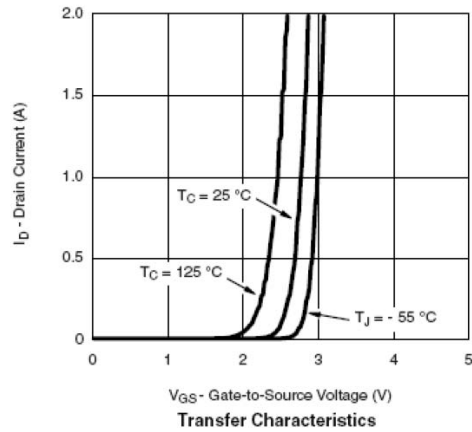
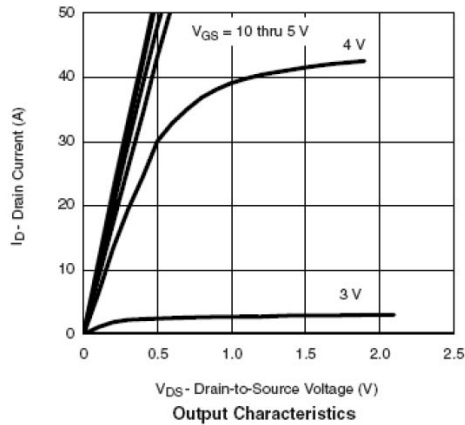

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Complementary Dual Enhancement Mode MOSFET

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

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

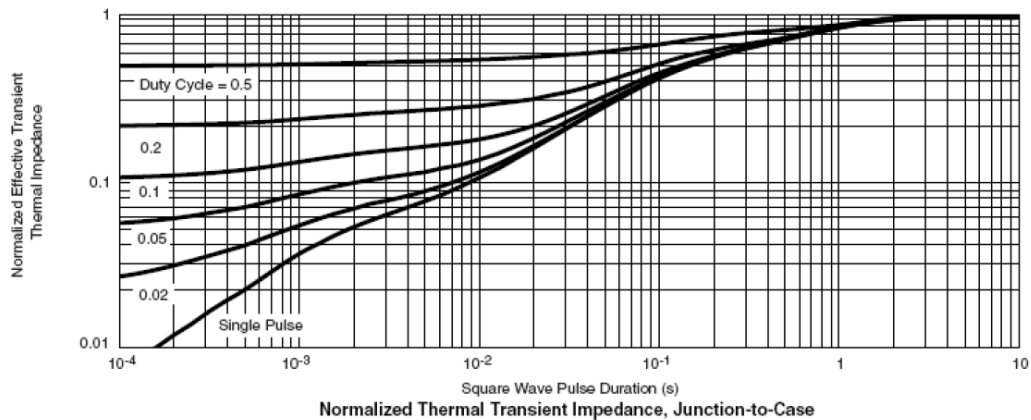
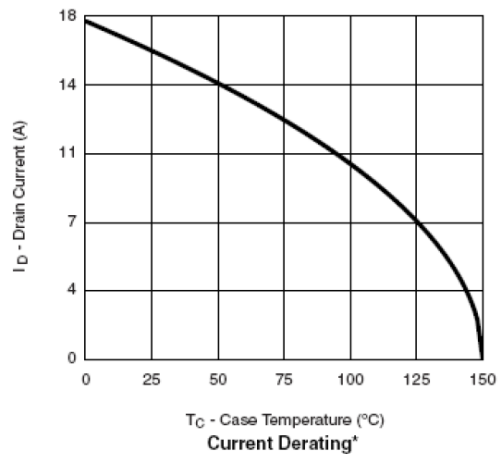
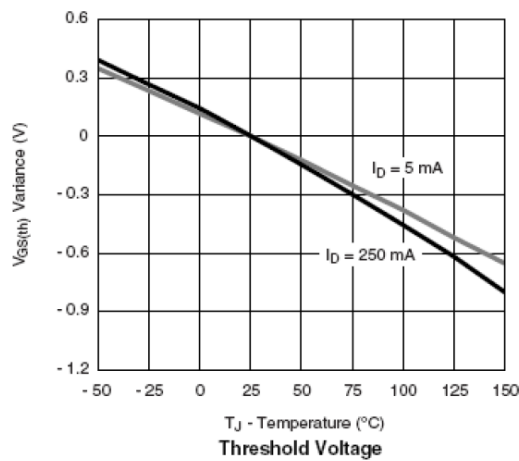
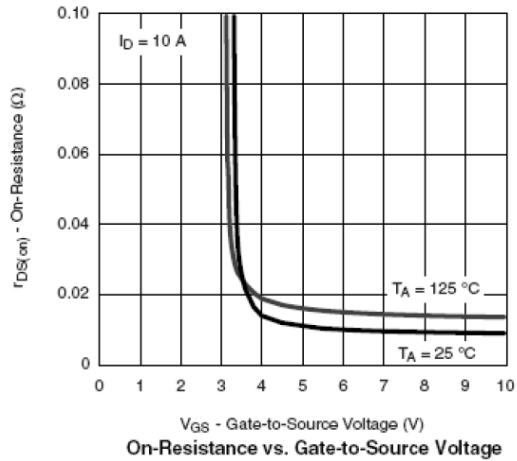
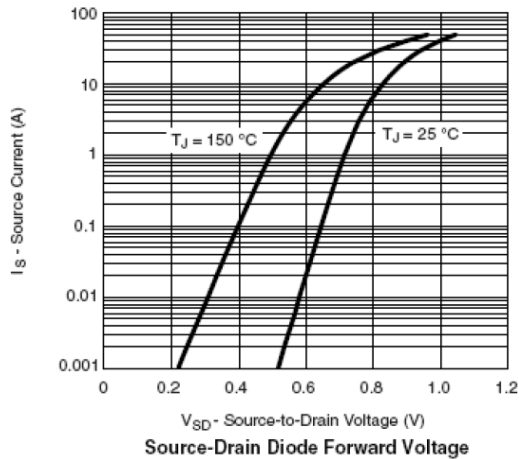
N-Channel						
Parameter	Symbol	Condition	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} =0V,I _D =250uA	30			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} ,I _D =250uA	1.0		3.0	V
Gate Leakage Current	I _{GSS}	V _{DS} =0V,V _{GS} =±20V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =24V,V _{GS} =0V			1	uA
		V _{DS} =24V,V _{GS} =0V T _J =55℃			5	
On-State Drain Current	I _{D(on)}	V _{DS} ≥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		Ω
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
Dynamic						
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 =15Ω I _D =5.0A,V _{GEN} =10V R _G =1Ω		15	20	nS
Turn-Off Time	T _{d(off)} t _f			6	16	
				20	40	
				12	20	

TYPICAL CHARACTERISTICS (N MOS)


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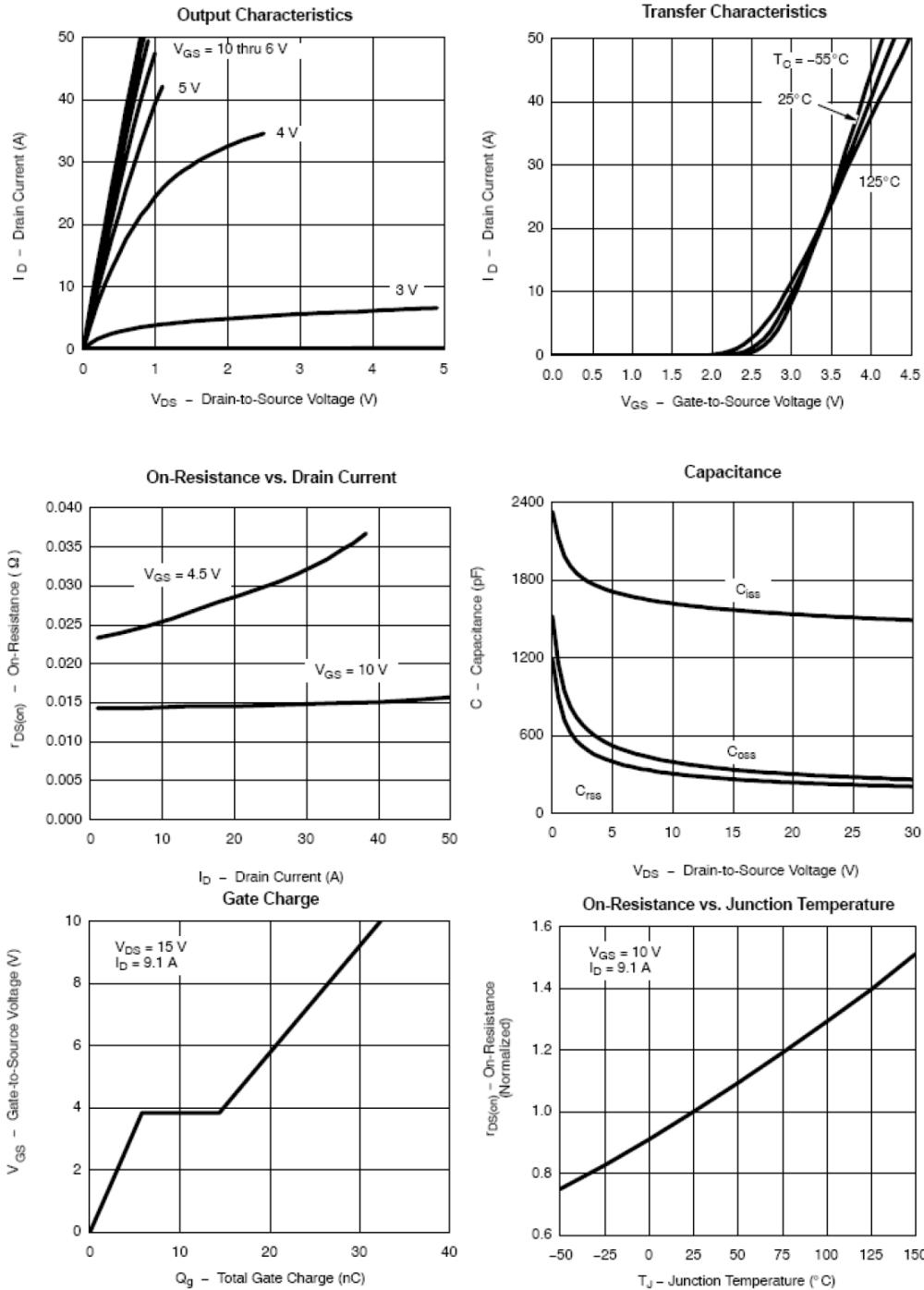
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TYPICAL CHARACTERISTICS (N MOS)

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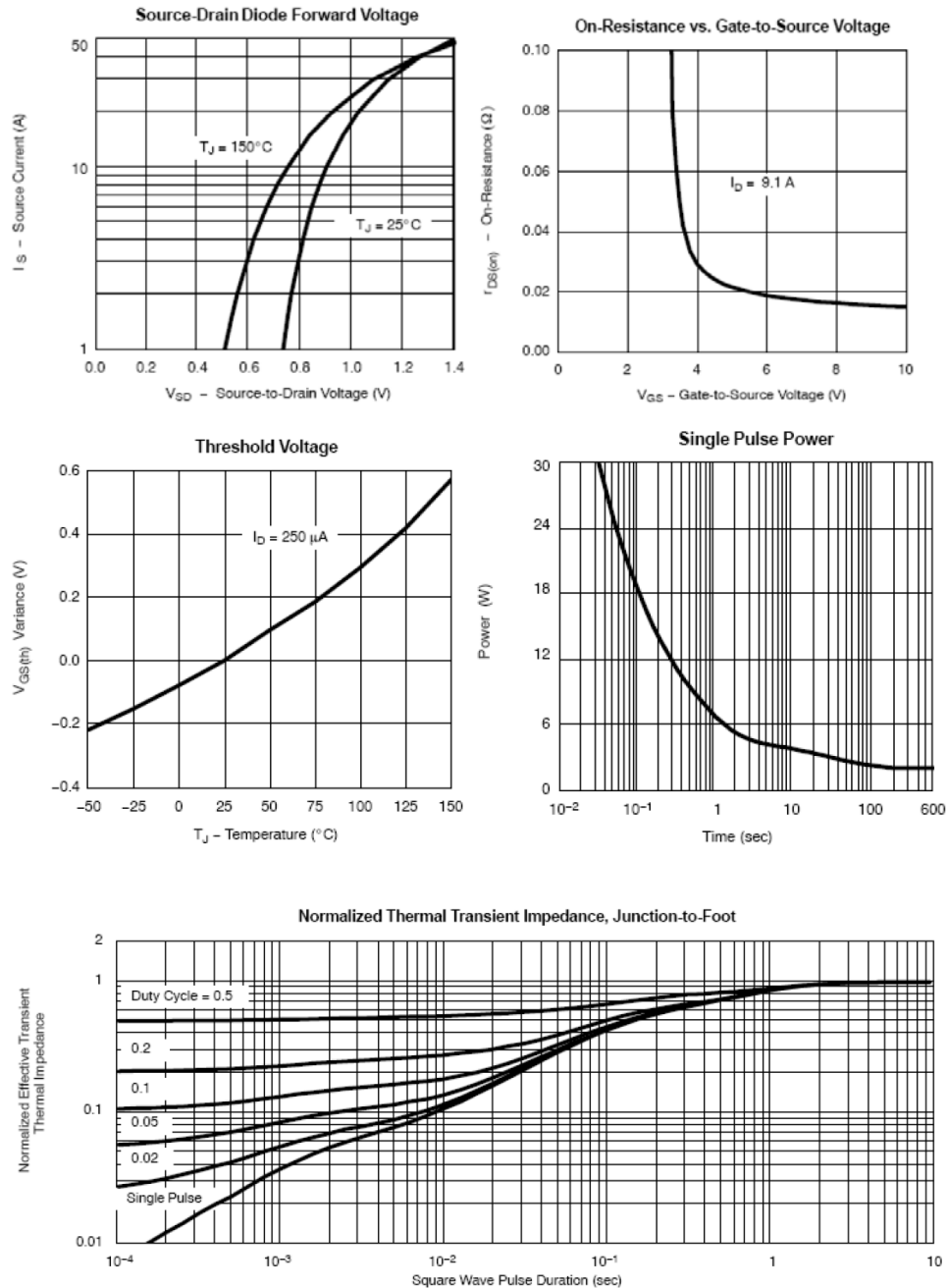
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TYPICAL CHARACTERISTICS (P MOS)


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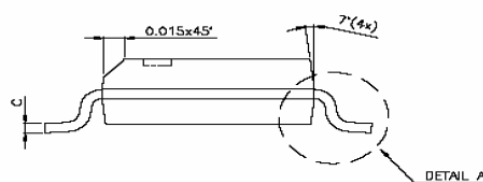
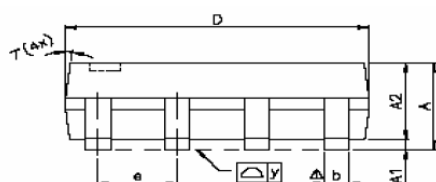
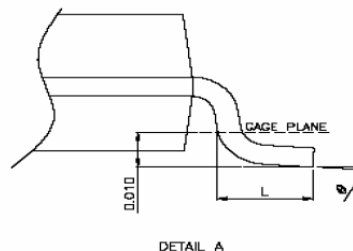
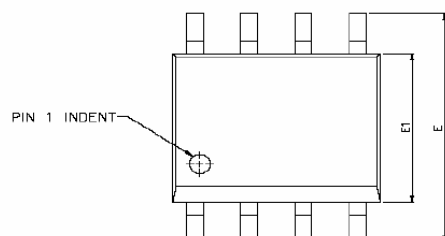
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TYPICAL CHARACTERISTICS (P MOS)

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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
Δy	—	—	0.076	—	—	0.003
θ	0°	—	8°	0°	—	8°