STC4539

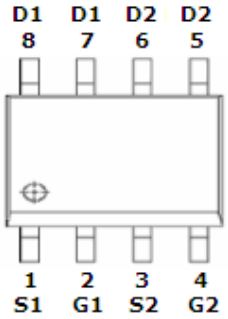
N&P Pair Enhancement Mode MOSFET

6.8A / -6.2A

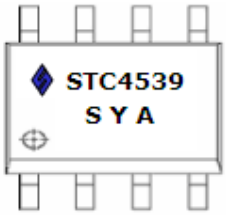
DESCRIPTION

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

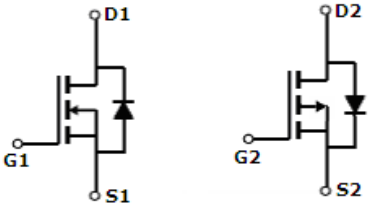


S : Subcontractor Y : Year Code
A : Process Code

FEATURE

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

P-Channel
- -30V/-6.2A, $R_{DS(ON)}$ = 60mΩ @V_{GS} = -10V
- -30V/-4.6A, $R_{DS(ON)}$= 80mΩ @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

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ABSOULTE MAXIMUM RATINGS (Ta = 25℃ Unless otherwise noted)

Parameter		Symbol	Typical N	Typical P	Unit
Drain-Source Voltage		V_{DSS}	30	-30	V
Gate-Source Voltage		V_{GSS}	±20	±20	V
Continuous Drain Current (TJ=150℃)	T_A=25℃ T_A=70℃	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℃ T_A=70℃	P_D	2.5 1.6	2.8 1.8	W
Operation Junction Temperature		T_J	150		℃
Storgae Temperature Range		T_{STG}	-55/150		℃
Thermal Resistance-Junction to Ambient	T≦10Sec Sready State	$R_{\theta JA}$	50 80	52 80	℃/W

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ELECTRICAL CHARACTERISTICS (Ta = 25℃ Unless otherwise noted)

Parameter	Symbol	Condition		Min	Typ	Max	Unit
Static							
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V,I_D=250uA V_{GS}=0V,I_D=-250uA	N P	30 -30			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=VGS,I_D=250 uA V_{DS}=VGS,I_D=-250uA	N P	1.0 -1.0		3.0 -3.0	V
Gate Leakage Current	I_{GSS}	V_{DS}=0V,V_{GS}=±20V V_{DS}=0V,V_{GS}=±20V	N P			±100 ±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=24V,V_{GS}=0V V_{DS}=-24V,V_{GS}=0V	N P			1 -1	uA
	T_J=55℃	V_{DS}=24V,V_{GS}=0V V_{DS}=-24V,V_{GS}=0V	N P			5 -5	
On-State Drain Current	$I_{D(on)}$	V_{DS}≧5V,V_{GS}=10V V_{DS}≦-5V,V_{GS}=-10V	N P	30 -30			A
Drain-source On-Resistance	$R_{DS(on)}$	V_{GS}=10V, I_D=6.8A V_{GS}=-10V,I_D=-5.7A	N P		0.026 0.045	0.034 0.060	Ω
		V_{GS}=4.5V, I_D=5.6A V_{GS}=-4.5V,I_D=-4.4A	N P		0.036 0.060	0.045 0.080	
Forward Tran Conductance	gfs	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	N P		13 15	20 25	nC
Gate-Source Charge	Q_{gs}	I_D≡5.9A **P-Channel**	N P		2.3 4.0		
Gate-Drain Charge	Q_{gd}	V_{DS}=-15V,V_{GS}=-10V I_D≡5.0A	N P		2.0 2.0		
Turn-On Time	$t_{d(on)}$ tr	**N-Channel** V_{DD}=15V,R_L=150Ω	N P		6.0 7.0	12 15	nS
		I_D=1A,V_{GEN}=10V R_G=6Ω	N P		14 10	25 20	
Turn-Off Time	$t_{d(off)}$ tf	**P-Channel** V_{DD}=-15V,R_L=150Ω	N P		30 40	60 80	
		I_D=-1A,V_{GEN}=-10V R_G=6Ω	N P		5 20	10 40	

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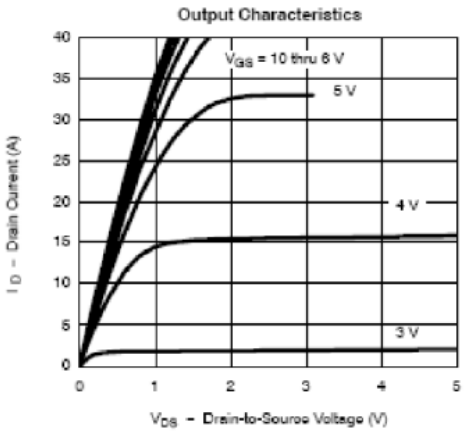
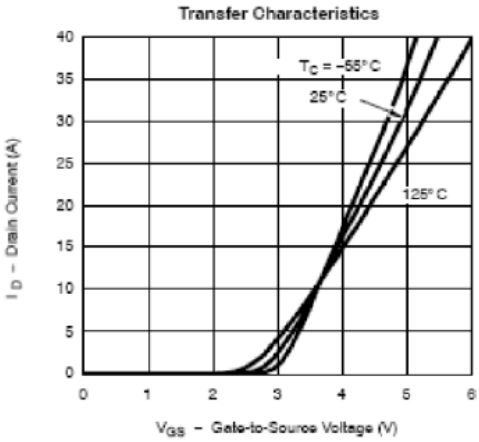
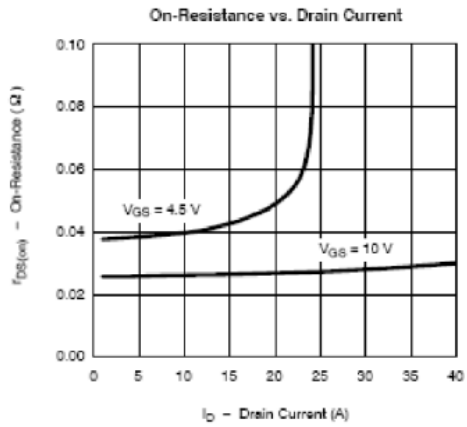
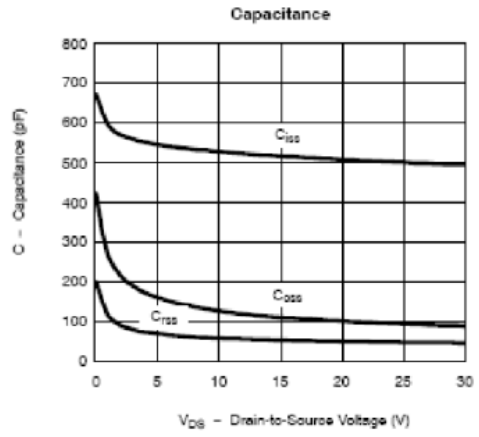
TYPICAL CHARACTERICTICS (N MOS)









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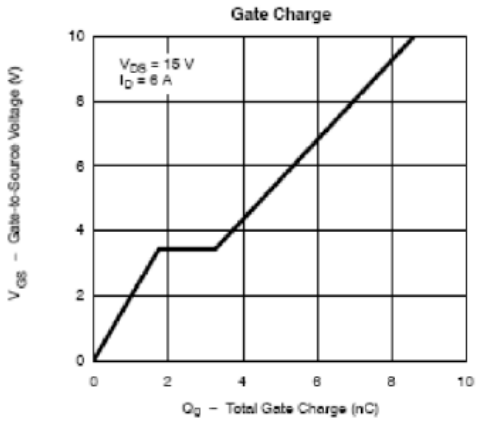

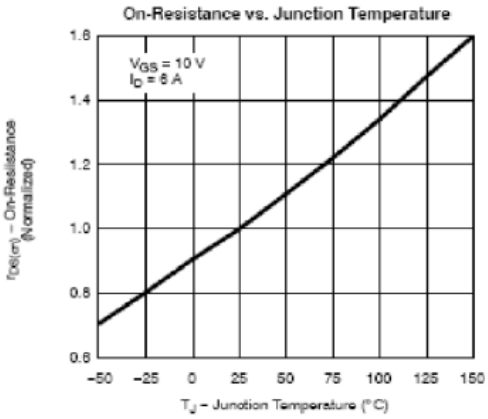

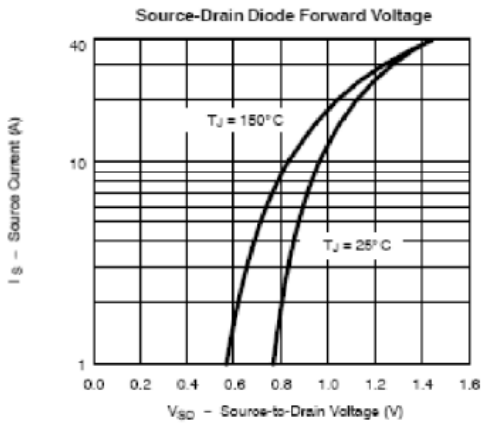

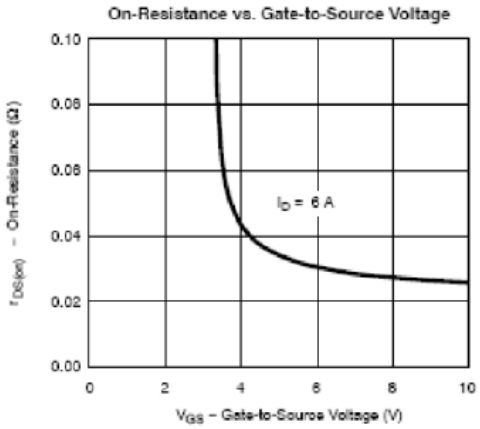

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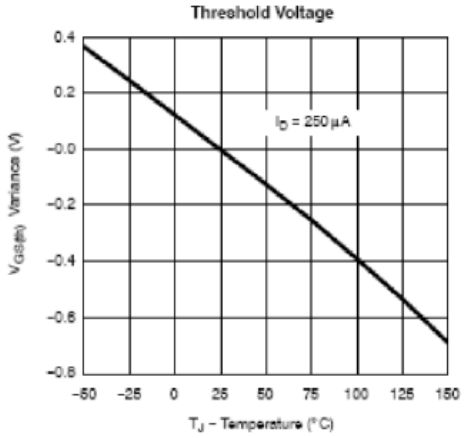

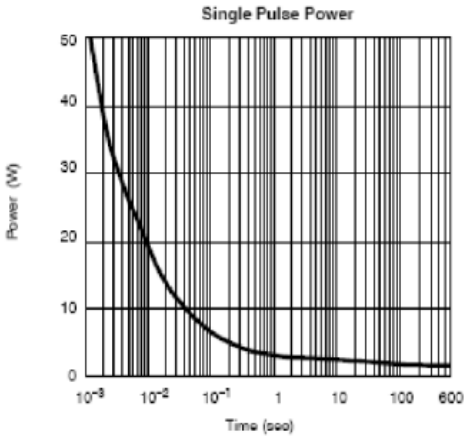

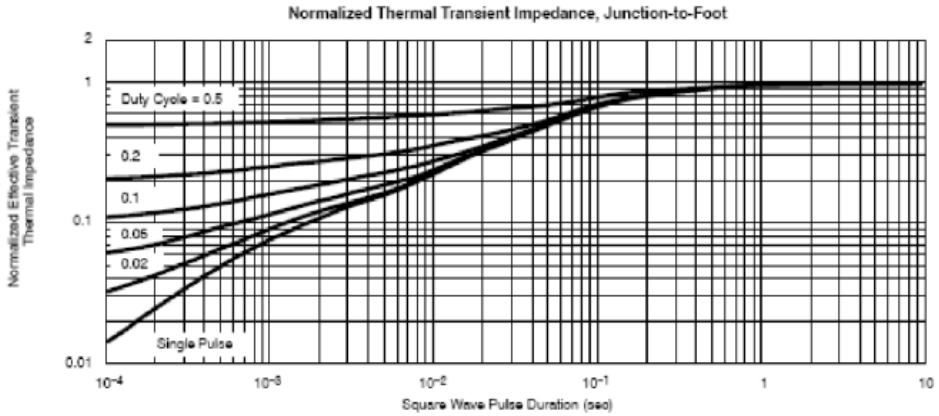

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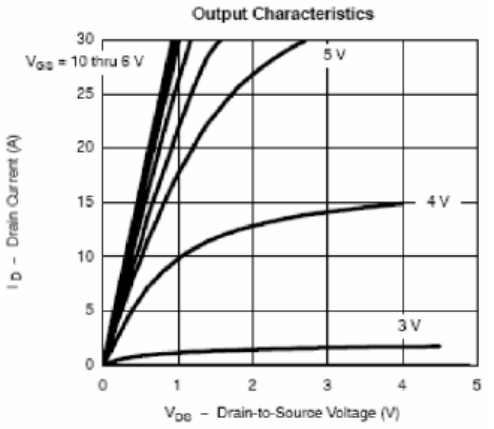
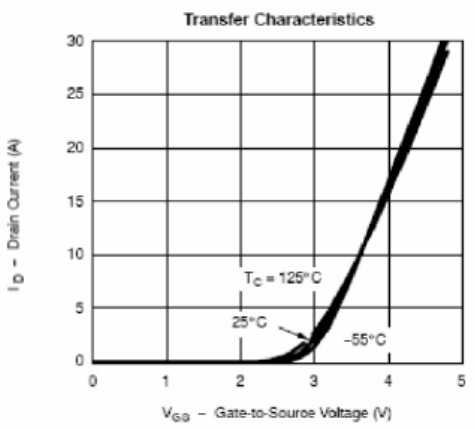
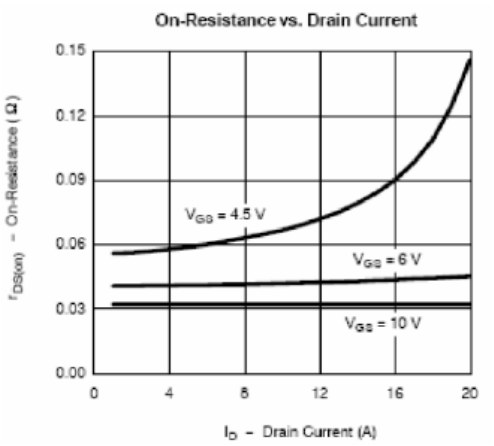
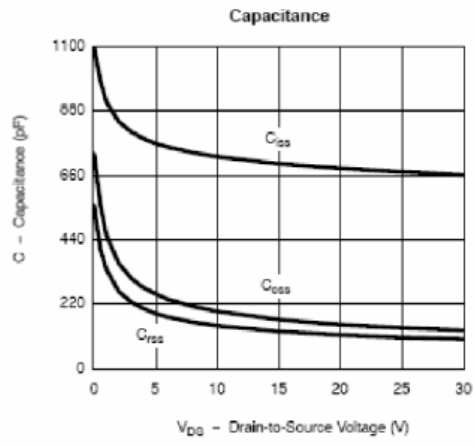
TYPICAL CHARACTERICTICS (P MOS)









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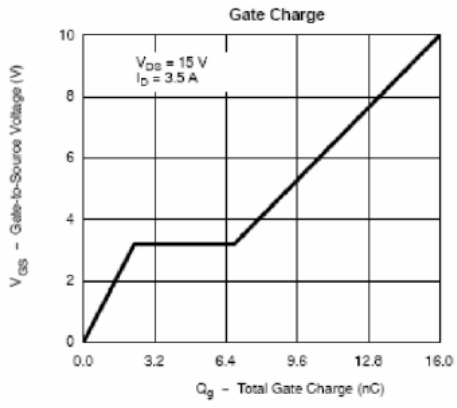

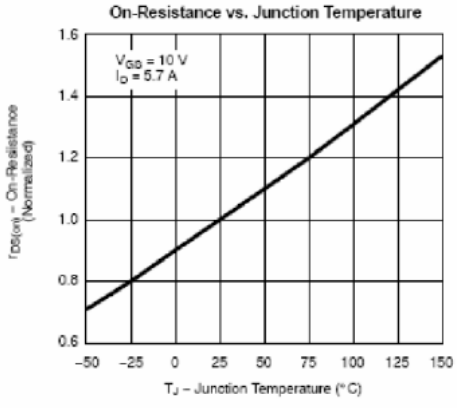

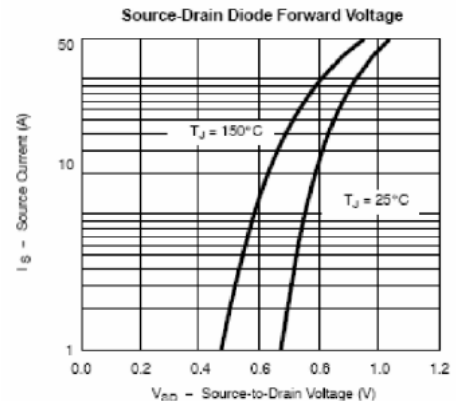

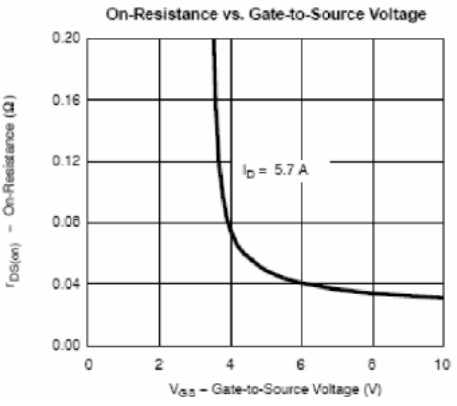

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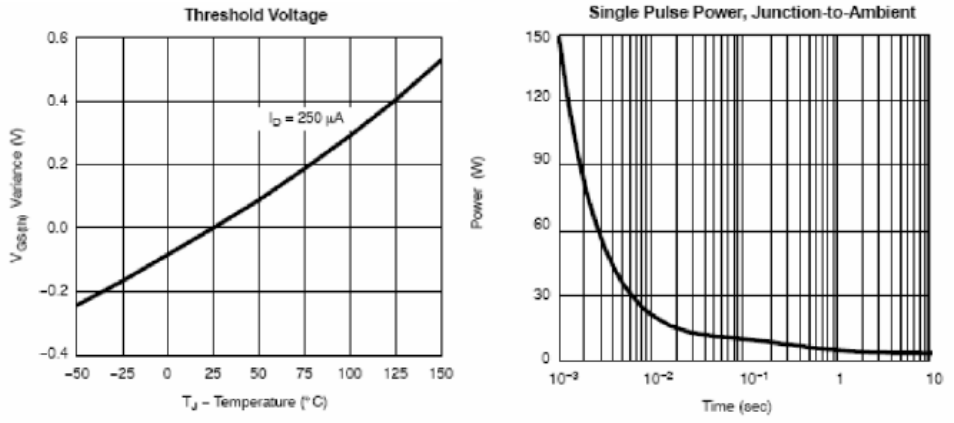

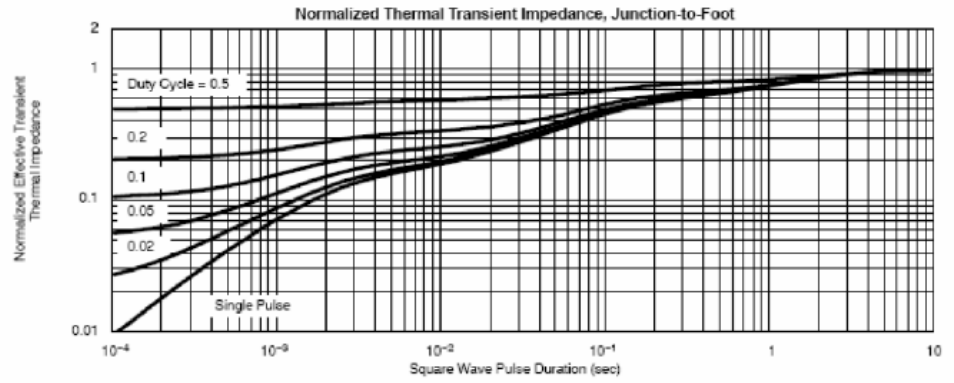

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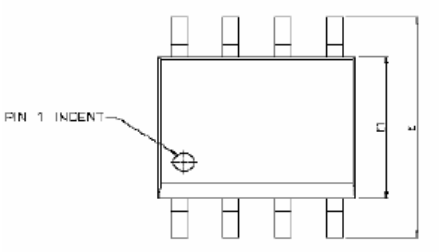
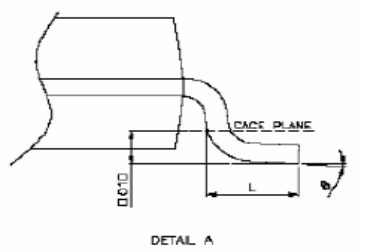
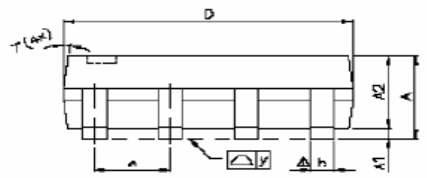
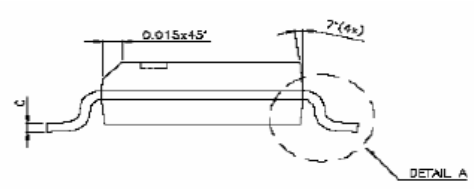
SOP-8 PACKAGE OUTLINE









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
⚠2 y	——	——	0.076	——	——	0.003
θ	0°	——	8°	0°	——	8°

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