

GSM4546

40V N-Channel Enhancement Mode MOSFET

Product Description

GSM4546, N-Channel enhancement mode MOSFET, uses Advanced Trench Technology to provide excellent $R_{DS(ON)}$, low gate charge.

These devices are particularly suited for low voltage power management, and low in-line power loss are needed in commercial industrial surface mount applications.

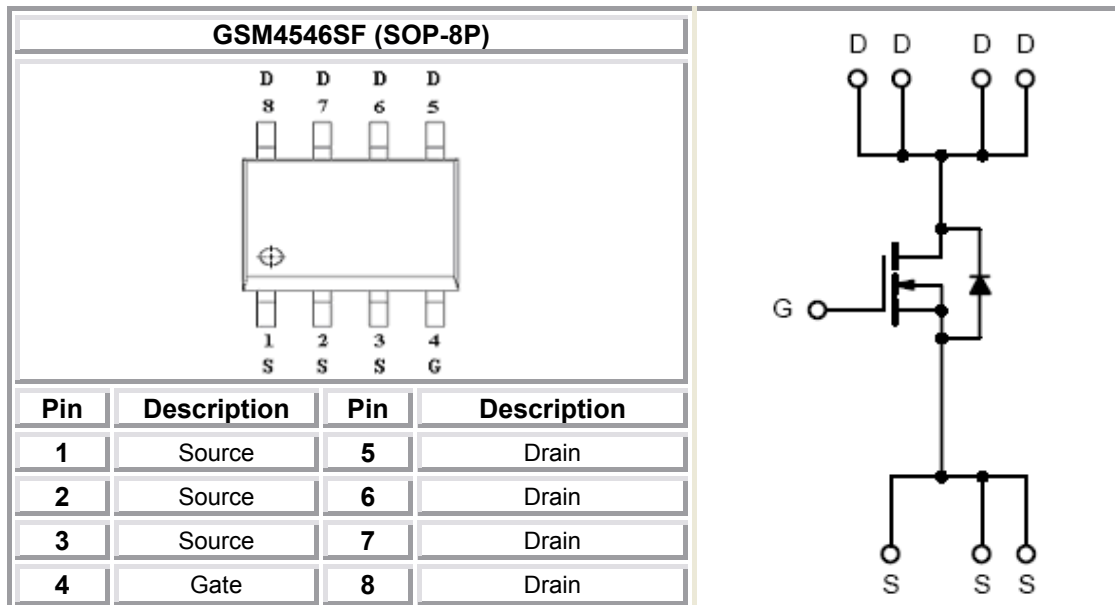
Features

- 40V/6.8A, $R_{DS(ON)}=52m\Omega@V_{GS}=10V$
- 40V/5.6A, $R_{DS(ON)}=70m\Omega@V_{GS}=4.5V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- SOP-8P package design

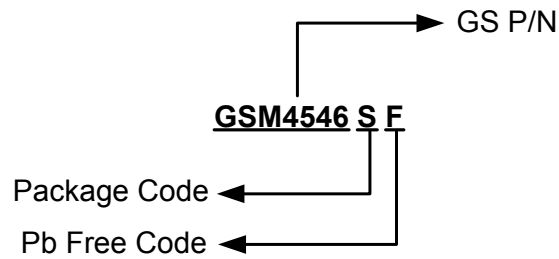
Applications

- Low Current DC/DC Conversion
- Load Switch
- CCFL Inverter
- Power Management in Notebook Computer

Packages & Pin Assignments

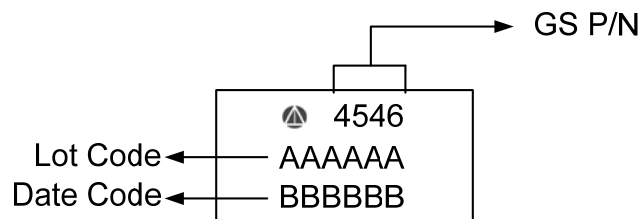


Ordering Information



Part Number	Package	Quantity Reel
GSM4546SF	SOP-8P	3000 PCS

Marking Information



Absolute Maximum Ratings

(T_A=25°C unless otherwise noted)

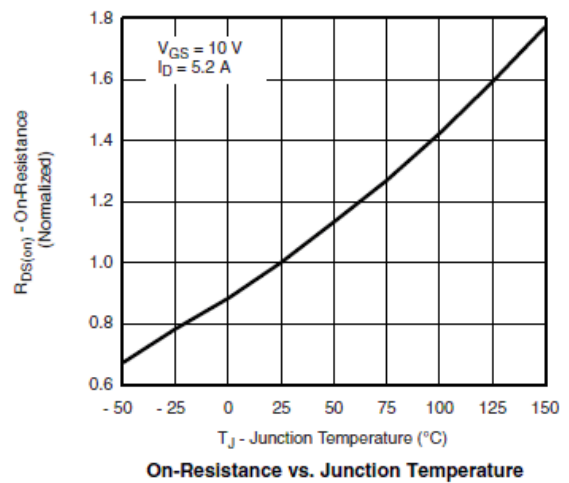
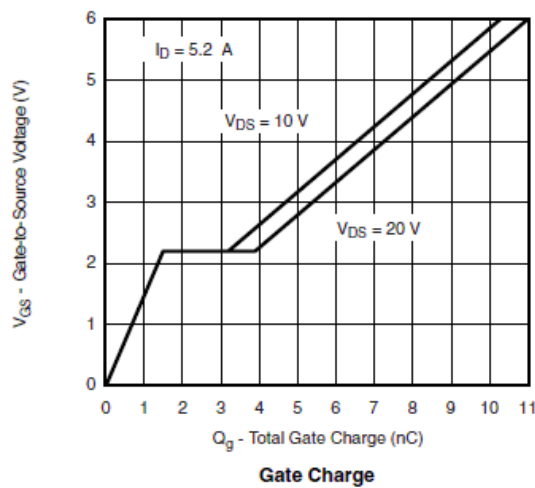
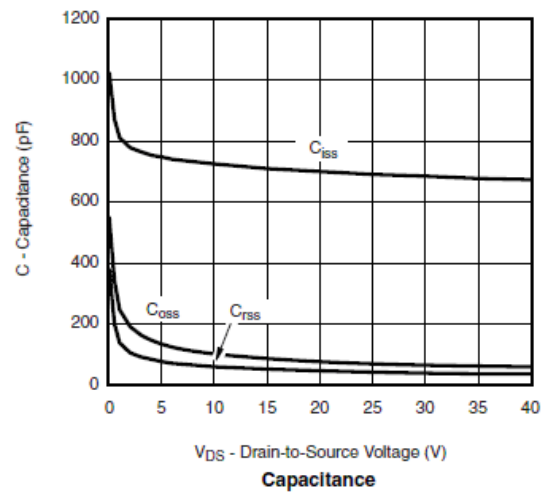
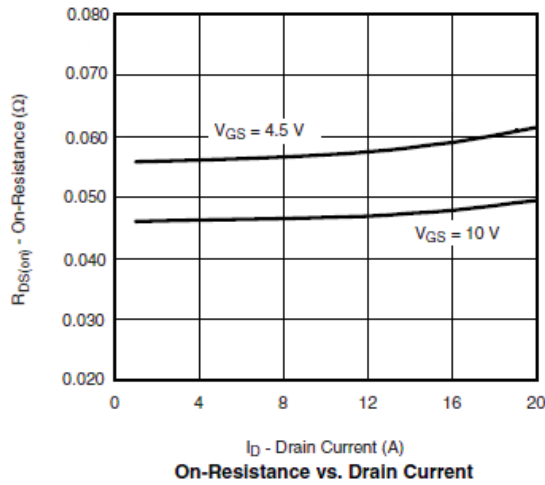
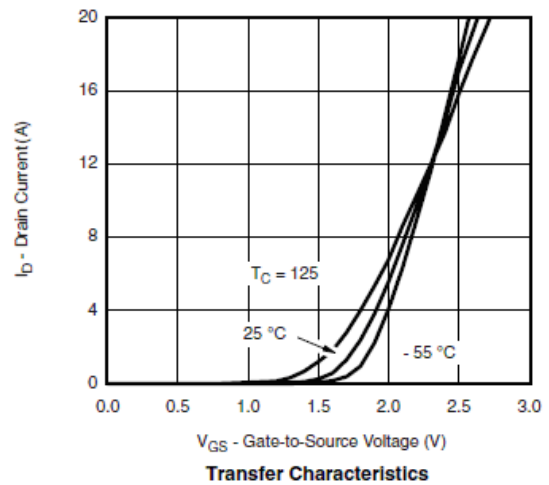
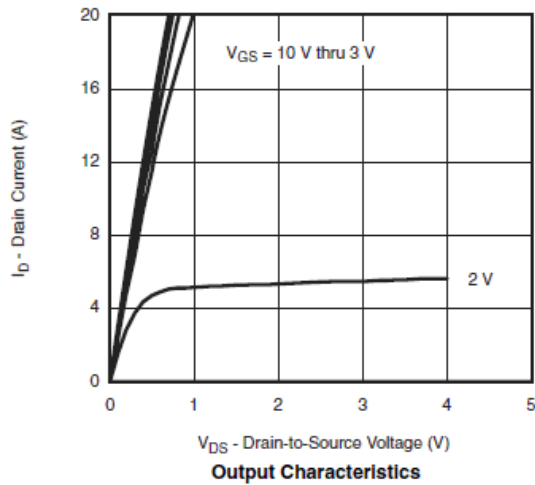
Symbol	Parameter	Typical	Unit
V _{DSS}	Drain-Source Voltage	40	V
V _{GSS}	Gate -Source Voltage	±20	V
I _D	Continuous Drain Current(T _J =150°C)	T _A =25°C	6.8
		T _A =70°C	5.6
I _{DM}	Pulsed Drain Current	20	A
I _S	Continuous Source Current(Diode Conduction)	1.5	A
P _D	Power Dissipation	T _A =25°C	2.8
		T _A =70°C	1.8
T _J	Operating Junction Temperature	150	°C
T _{STG}	Storage Temperature Range	-55/150	°C
R _{θJA}	Thermal Resistance-Junction to Ambient	62.5	°C/ W

Electrical Characteristics

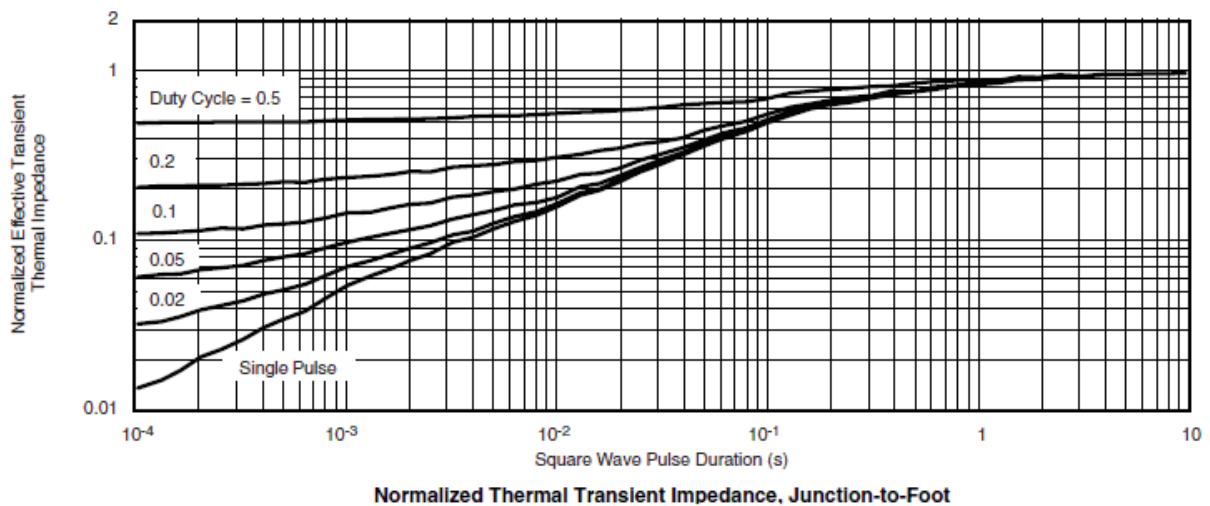
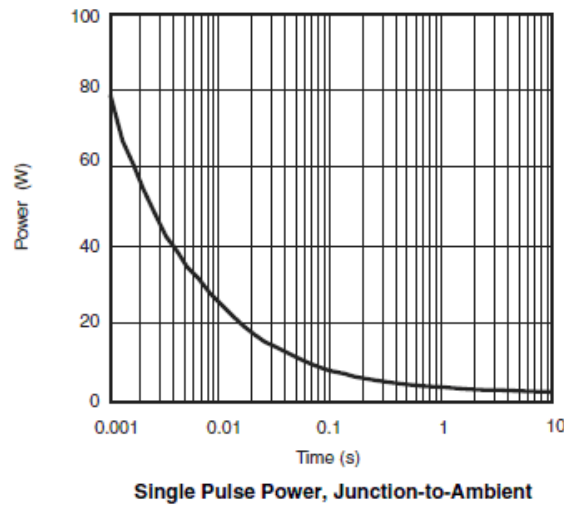
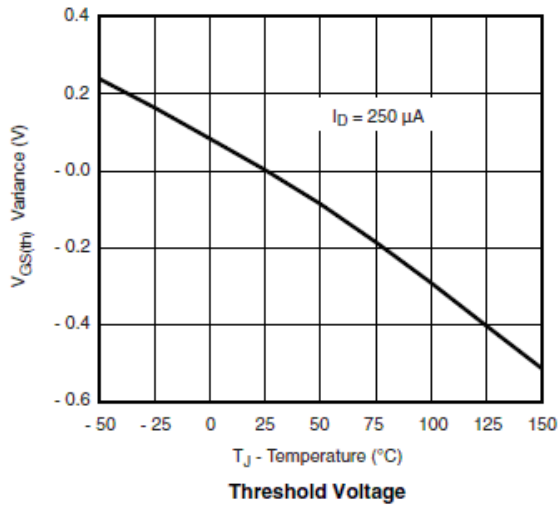
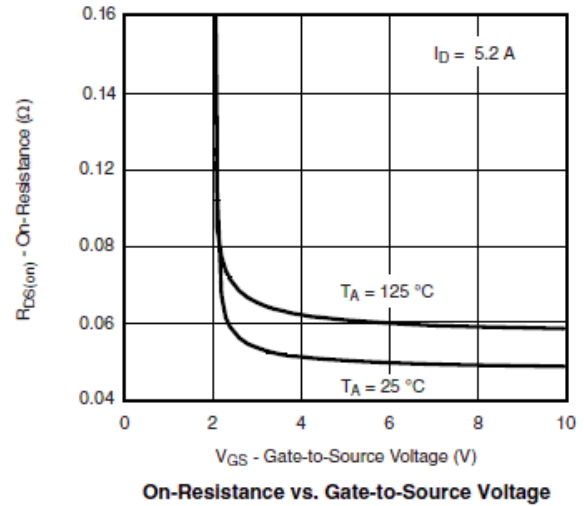
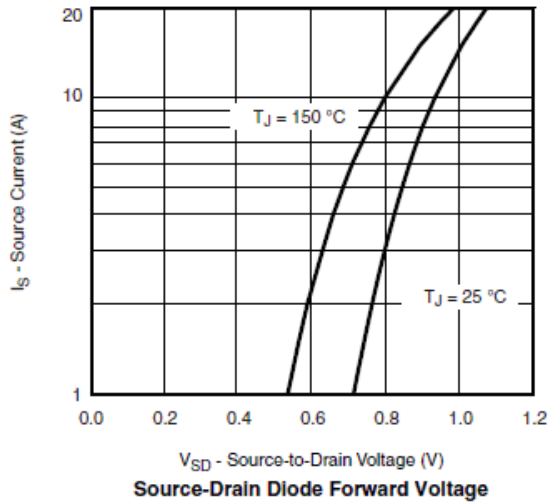
($T_A=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	40			V
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	1.0		2.0	V
I_{GSS}	Gate Leakage Current	$V_{DS}=0V, V_{GS}=\pm 20V$			± 100	nA
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=40V, V_{GS}=0V$			1	uA
		$V_{DS}=40V, V_{GS}=0V, T_J=85^\circ\text{C}$			10	
$I_{D(on)}$	On-State Drain Current	$V_{DS}\geq 5V, V_{GS}=10V$	10			A
$R_{DS(on)}$	Drain-Source On-Resistance	$V_{GS}=10V, I_D=6.8A$		38	52	m Ω
		$V_{GS}=4.5V, I_D=5.6A$		56	70	
g_{FS}	Forward Transconductance	$V_{DS}=10V, I_D=5.0A$		16		S
V_{SD}	Diode Forward Voltage	$I_S=2.0A, V_{GS}=0V$		0.85	1.2	V
Dynamic						
C_{iss}	Input Capacitance	$V_{DS}=20V, V_{GS}=0V, f=1\text{MHz}$		650		pF
C_{oss}	Output Capacitance			75		
C_{rSS}	Reverse Transfer Capacitance			45		
Q_g	Total Gate Charge	$V_{DS}=20V, V_{GS}=4.5V, I_D=5.0A$		10	15	nC
Q_{gs}	Gate-Source Charge			2		
Q_{gd}	Gate-Drain Charge			2.5		
$t_{d(on)}$	Turn-On Time	$V_{DD}=15V, R_L=15\Omega, I_D=1A, V_{GEN}=10V, R_G=6\Omega$		8	15	ns
t_r				12	20	
$t_{d(off)}$	Turn-Off Time			28	40	
t_f				8	15	

Typical Performance Characteristics

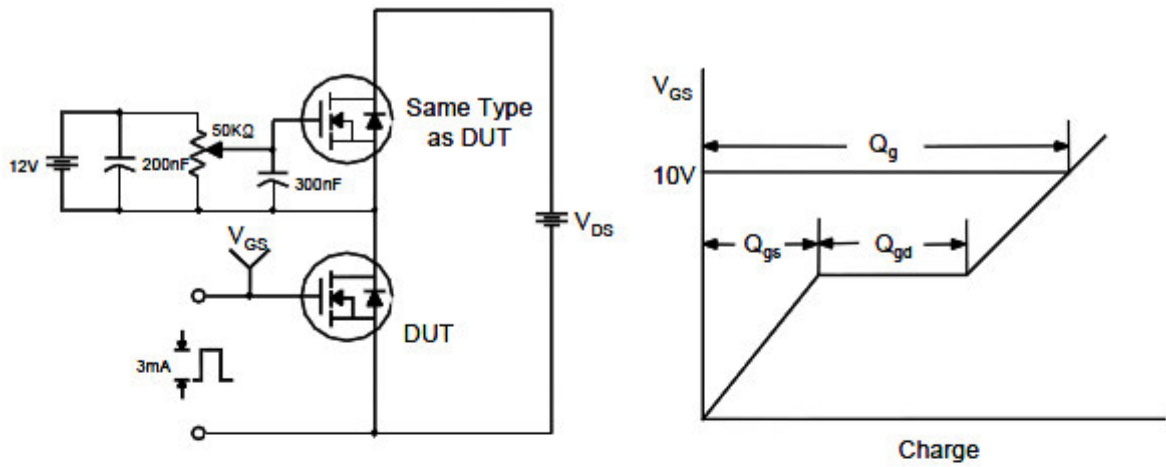


Typical Performance Characteristics (continue)

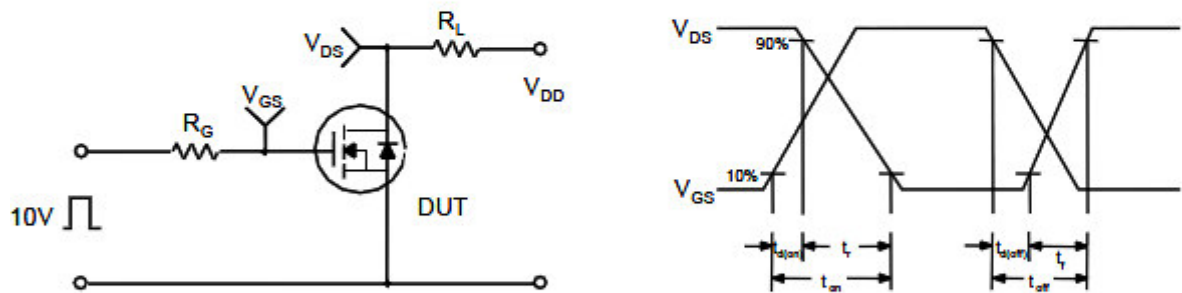


Typical Characteristics

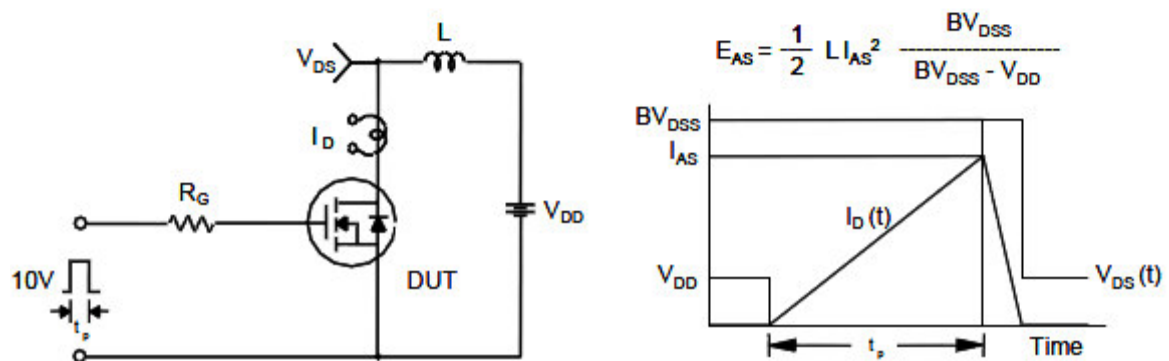
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

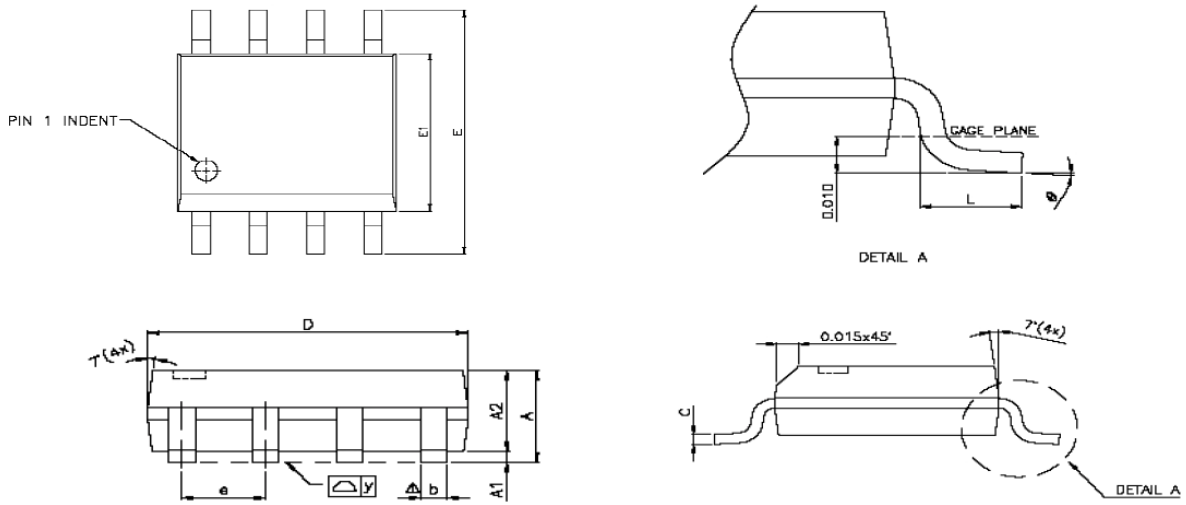


Unclamped Inductive Switching Test Circuit & Waveforms




Package Dimension

SOP-8P







Dimensions

Symbol	Millimeters			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
 y	-	-	0.076	-	-	0.003
θ	0°	-	8°	0°	-	8°



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