

GSM2306AE

20V N-Channel Enhancement Mode MOSFET

Product Description

GSM2306AE, 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, such as smart phone and notebook computer and other battery powered circuits, and low in-line power loss are needed in commercial industrial surface mount applications.

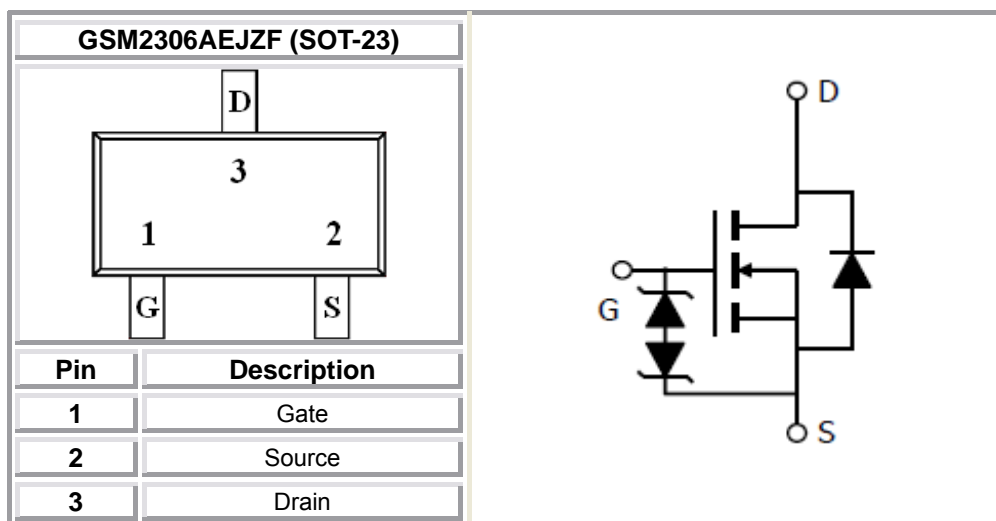
Features

- 20V/1.8A, $R_{DS(ON)}=280m\Omega@V_{GS}=4.5V$
- 20V/1.5A, $R_{DS(ON)}=340m\Omega@V_{GS}=2.5V$
- 20V/1.2A, $R_{DS(ON)}=750m\Omega@V_{GS}=1.8V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- ESD Protected
- SOT-23 package design

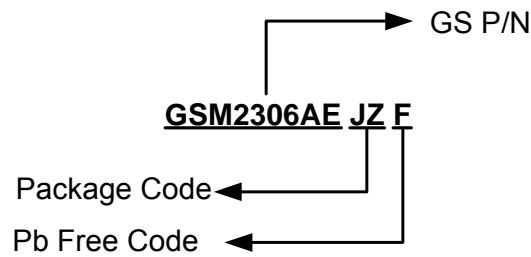
Applications

- Direct Logic-Level Interface: TTL/CMOS
- Drivers: Relays, Solenoids, Lamps, Hammers
- Battery Operated Systems, DC/DC Converters
- Solid-State Relays
- Load/Power Switching-Cell Phones, Pagers

Packages & Pin Assignments

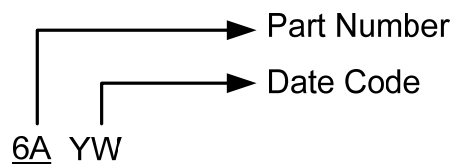


Ordering Information



Part Number	Package	Quantity Reel
GSM2306AEJZF	SOT-23	3000 PCS

Marking Information



Absolute Maximum Ratings

(T_A=25°C unless otherwise noted)

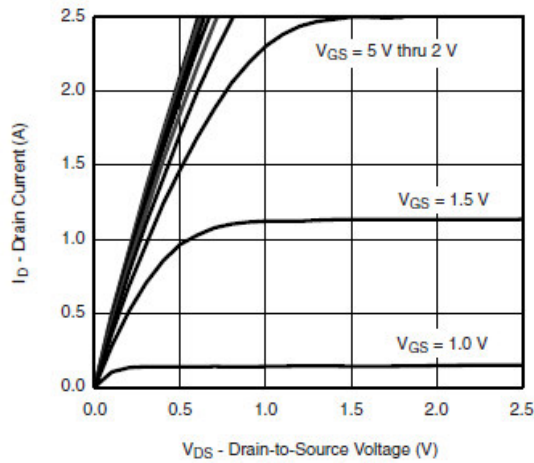
Symbol	Parameter	Typical	Unit
V _{DSS}	Drain-Source Voltage	20	V
V _{GSS}	Gate –Source Voltage	±12	V
I _D	Continuous Drain Current(T _J =150°C)	T _A =25°C	1.8
		T _A =70°C	1.2
I _{DM}	Pulsed Drain Current	6	A
I _S	Continuous Source Current(Diode Conduction)	1	A
P _D	Power Dissipation	T _A =25°C	1.25
		T _A =70°C	0.8
T _J	Operating Junction Temperature	150	°C
T _{STG}	Storage Temperature Range	-55/150	°C
R _{θJA}	Thermal Resistance-Junction to Ambient	120	°C/W

Electrical Characteristics

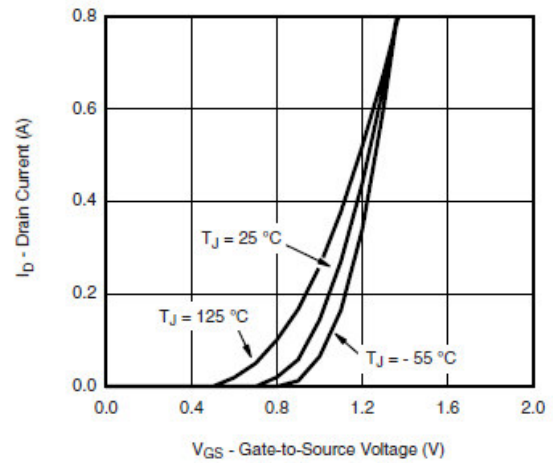
($T_A=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	20			V
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	0.3		0.8	V
I_{GSS}	Gate Leakage Current	$V_{DS}=0V, V_{GS}=\pm 12V$			± 1	mA
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=16V, V_{GS}=0V$			1	uA
		$V_{DS}=16V, V_{GS}=0V, T_J=85^\circ\text{C}$			5	
$I_{D(on)}$	On-State Drain Current	$V_{DS}\geq 5V, V_{GS}=4.5V$	1.8			A
$R_{DS(on)}$	Drain-Source On-Resistance	$V_{GS}=4.5V, I_D=1.8A$		220	280	m Ω
		$V_{GS}=2.5V, I_D=1.5A$		260	340	
		$V_{GS}=1.8V, I_D=1.2A$		540	750	
g_{FS}	Forward Transconductance	$V_{DS}=10V, I_D=1.0A$		1		S
V_{SD}	Diode Forward Voltage	$I_S=1.0A, V_{GS}=0V$		0.65	1.2	V
Dynamic						
C_{iss}	Input Capacitance	$V_{DS}=10V, V_{GS}=0V, f=1\text{MHz}$		70		pF
C_{oss}	Output Capacitance			20		
C_{rSS}	Reverse Transfer Capacitance			8		
Q_g	Total Gate Charge	$V_{DS}=10V, V_{GS}=4.5V, I_D=1.2A$		1.06	1.38	nC
Q_{gs}	Gate-Source Charge			0.18		
Q_{gd}	Gate-Drain Charge			0.32		
$t_{d(on)}$	Turn-On Time	$V_{DD}=10V, R_L=20\Omega, I_D=1.2A, V_{GEN}=4.5V, R_G=1\Omega$		18	26	ns
t_r				20	28	
$t_{d(off)}$	Turn-Off Time			70	110	
t_f				25	40	

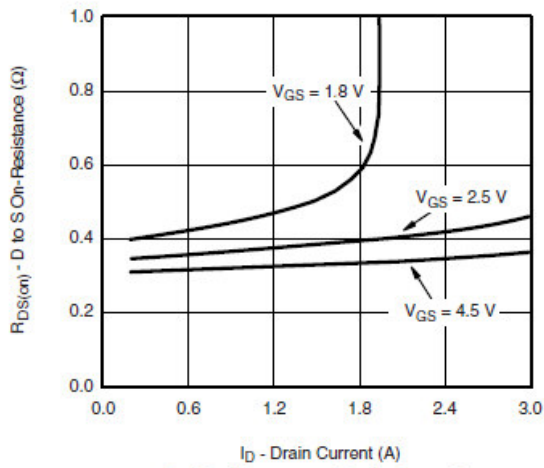
Typical Performance Characteristics



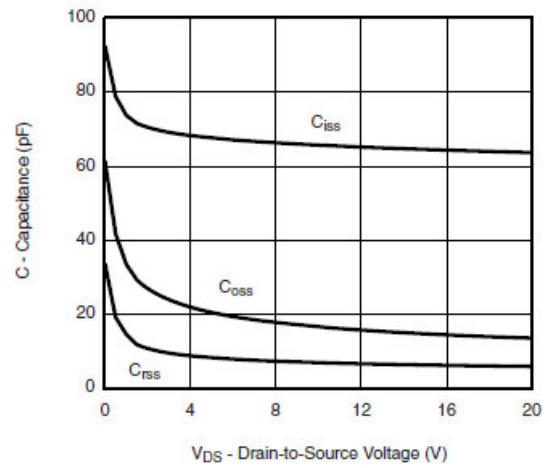
Output Characteristics



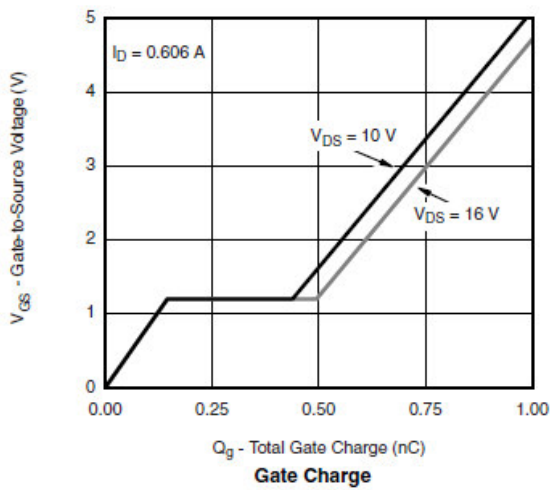
Transfer Characteristics



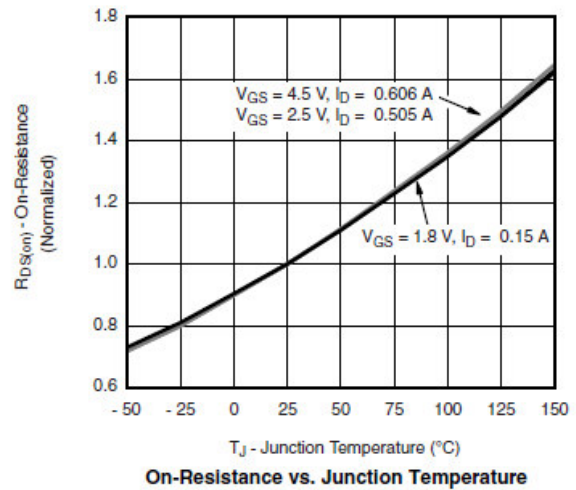
On-Resistance vs. Drain Current



Capacitance

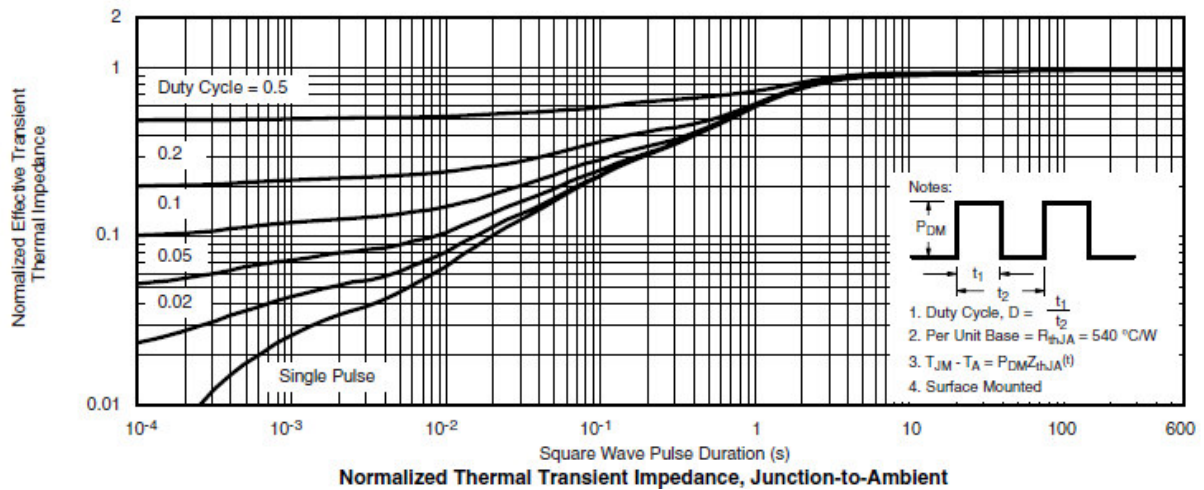
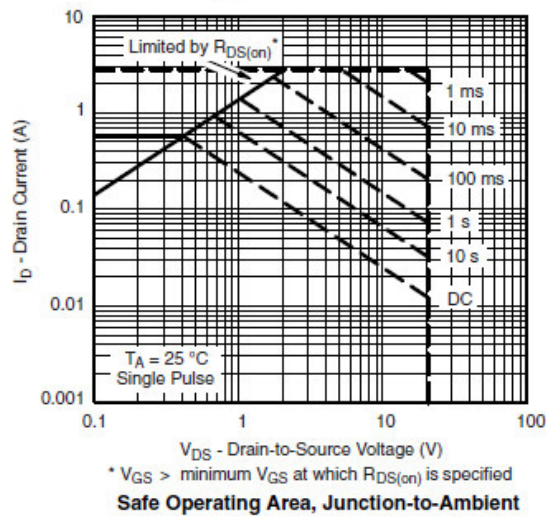
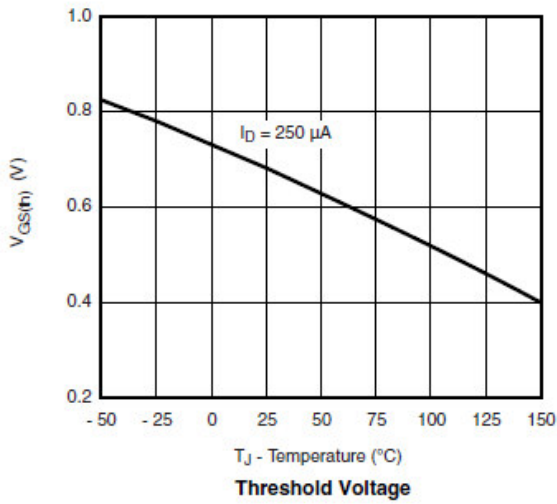
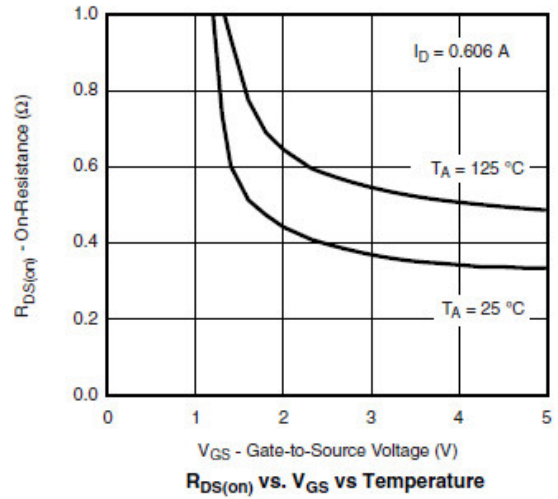
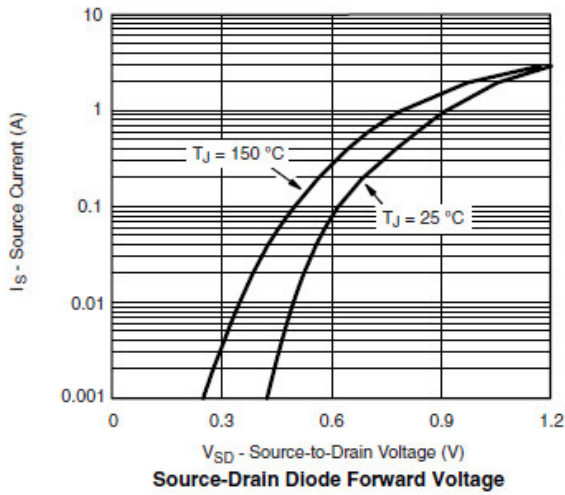


Gate Charge



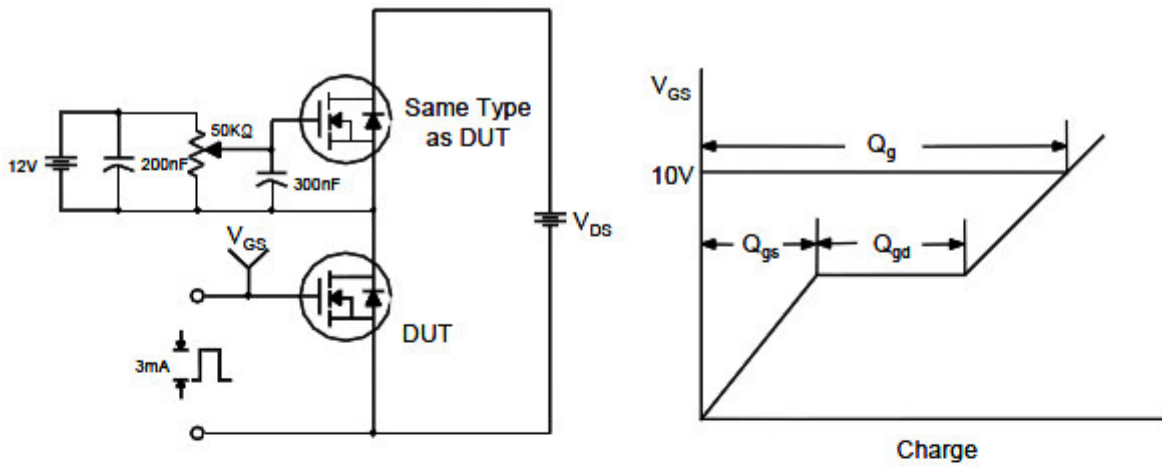
On-Resistance vs. Junction Temperature

Typical Performance Characteristics (continue)

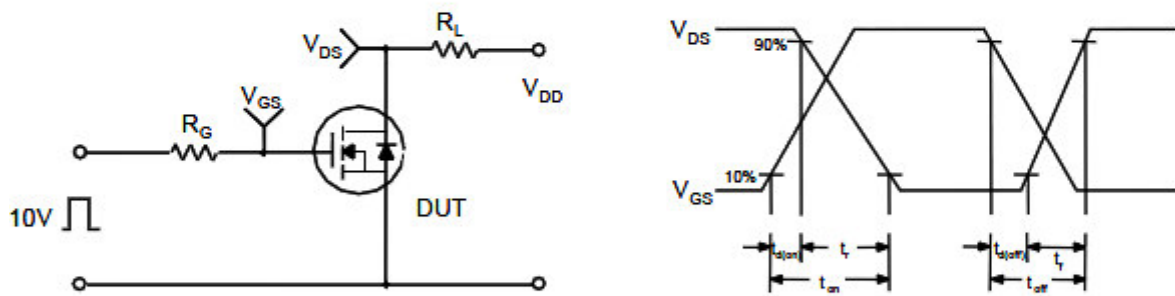


Typical Performance Characteristics (continue)

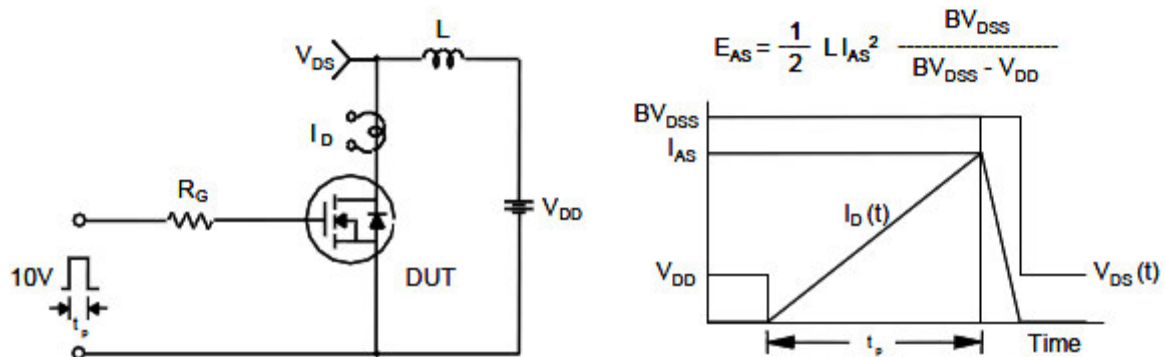
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

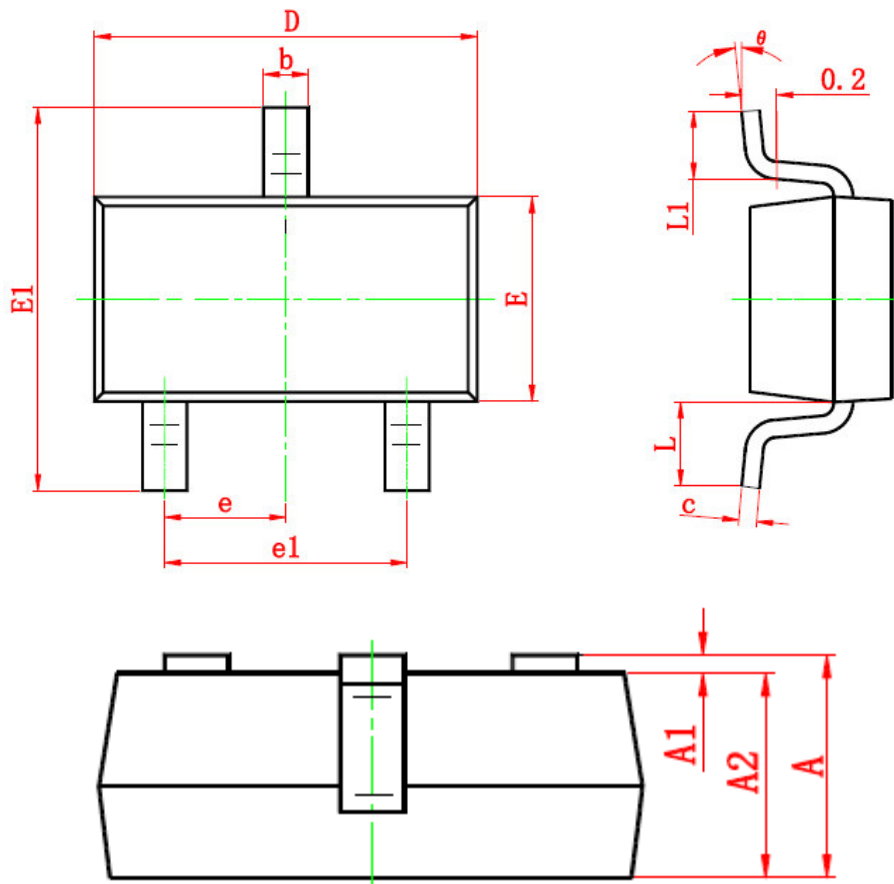


Unclamped Inductive Switching Test Circuit & Waveforms



Package Dimension

SOT-23 PLASTIC PACKAGE











Dimensions				
SYMBOL	Millimeters		Inches	
	MIN	MAX	MIN	MAX
A	0.90	1.20	0.035	0.043
A1	0.00	0.10	0.000	0.004
A2	0.90	1.10	0.035	0.039
b	0.30	0.50	0.012	0.020
c	0.08	0.15	0.003	0.006
D	2.80	3.00	0.110	0.118
E	1.20	1.40	0.047	0.055
E1	2.25	2.55	0.089	0.100
e	0.950 (TYP)		0.037 (TYP)	
e1	1.80	2.00	0.071	0.079
L	0.550 (REF)		0.022 (REF)	
L1	0.30	0.50	0.012	0.020
Q	0°	8°	0°	8°



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