

# GSM2311A

## 20V P-Channel Enhancement Mode MOSFET

### Product Description

GSM2311A, P-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.

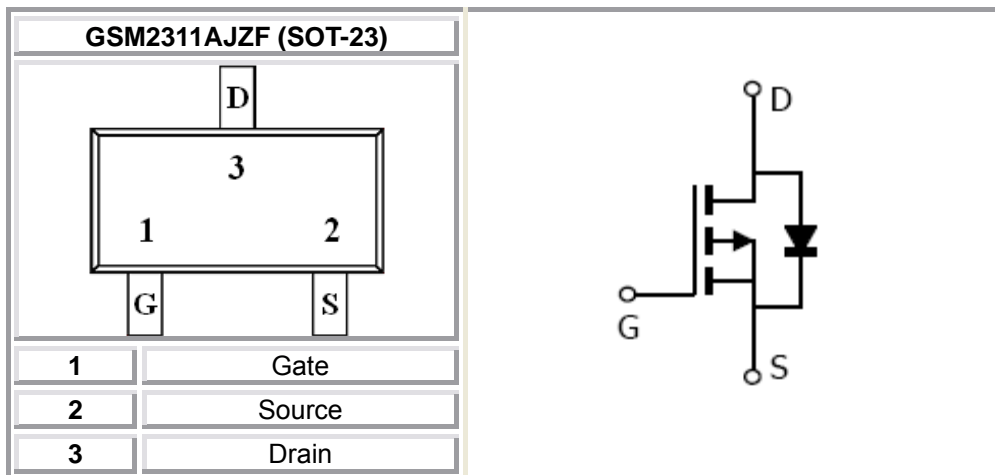
### Features

- -20V/-2.8A,  $R_{DS(ON)}=68m\Omega@V_{GS}=-4.5V$
- -20V/-2.2A,  $R_{DS(ON)}=80m\Omega@V_{GS}=-2.5V$
- -20V/-1.8A,  $R_{DS(ON)}=105m\Omega@V_{GS}=-1.8V$
- Super high density cell design for extremely low  $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- SOT-23 package design

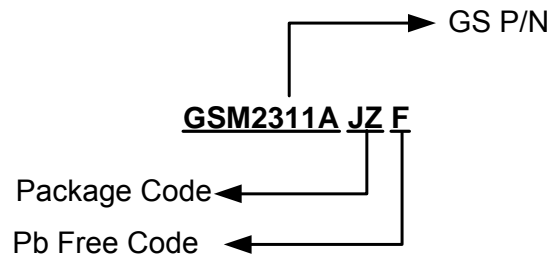
### Applications

- Portable Equipment
- Battery Powered System
- Net Working System

### Packages & Pin Assignments

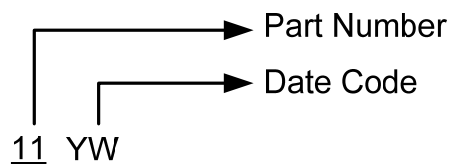


## Ordering Information



Part Number	Package	Quantity Reel
GSM2311AJZF	SOT-23	3000 PCS

## Marking Information



## Absolute Maximum Ratings

(T<sub>A</sub>=25°C unless otherwise noted)

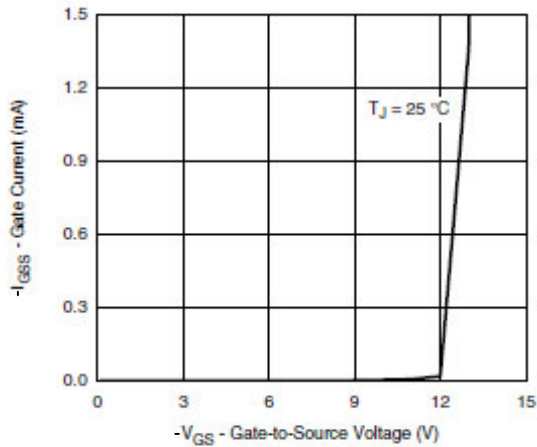
Symbol	Parameter	Typical	Unit
V <sub>DSS</sub>	Drain-Source Voltage	-20	V
V <sub>GSS</sub>	Gate -Source Voltage	±12	V
I <sub>D</sub>	Continuous Drain Current(T <sub>J</sub> =150°C)	T <sub>A</sub> =25°C	-2.8
		T <sub>A</sub> =70°C	-1.8
I <sub>DM</sub>	Pulsed Drain Current	-10	A
I <sub>S</sub>	Continuous Source Current(Diode Conduction)	-1.6	A
P <sub>D</sub>	Power Dissipation	T <sub>A</sub> =25°C	1.25
		T <sub>A</sub> =70°C	0.8
T <sub>J</sub>	Operating Junction Temperature Range	-55/150	°C
T <sub>STG</sub>	Storage Temperature Range	-55/150	°C
R <sub>θJA</sub>	Thermal Resistance-Junction to Ambient	120	°C/W

## Electrical Characteristics

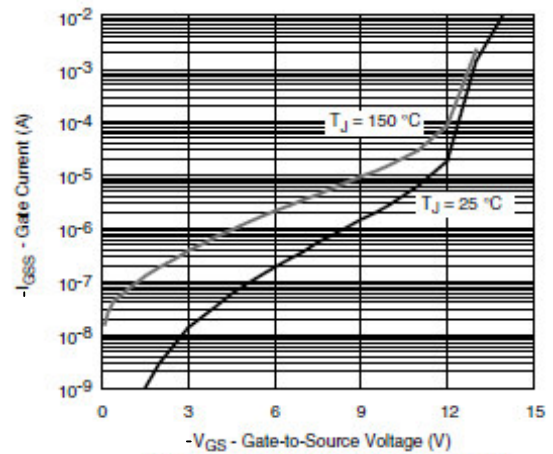
(T<sub>A</sub>=25°C unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>Static</b>						
V <sub>(BR)DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>D</sub> =-250μA	-20			V
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =-250μA	-0.4		-0.8	V
I <sub>GSS</sub>	Gate Leakage Current	V <sub>DS</sub> =0V, V <sub>GS</sub> =±12V			±100	nA
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> =-16V, V <sub>GS</sub> =0V			-1	μA
		V <sub>DS</sub> =-16V, V <sub>GS</sub> =0V, T <sub>J</sub> =85°C			-10	
I <sub>D(on)</sub>	On-State Drain Current	V <sub>DS</sub> ≤ -5V, V <sub>GS</sub> =-4.5V	-6			A
		V <sub>DS</sub> ≤ -5V, V <sub>GS</sub> =-2.5V	-4			
R <sub>DS(on)</sub>	Drain-Source On-Resistance	V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-2.8A		55	68	mΩ
		V <sub>GS</sub> =-2.5V, I <sub>D</sub> =-2.2A		70	80	
		V <sub>GS</sub> =-1.8V, I <sub>D</sub> =-1.8A		90	105	
g <sub>fs</sub>	Forward Transconductance	V <sub>DS</sub> =-5V, I <sub>D</sub> =-2.4A		10		S
V <sub>SD</sub>	Diode Forward Voltage	I <sub>S</sub> =-1.6A, V <sub>GS</sub> =0V		-0.85	-1.2	V
<b>Dynamic</b>						
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =-10V, V <sub>GS</sub> =0V, f=1MHz		780		pF
C <sub>oss</sub>	Output Capacitance			115		
C <sub>rss</sub>	Reverse Transfer Capacitance			55		
Q <sub>g</sub>	Total Gate Charge	V <sub>DS</sub> =-10V, V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-2.4A		8.0	12	nC
Q <sub>gs</sub>	Gate-Source Charge			0.9		
Q <sub>gd</sub>	Gate-Drain Charge			3.0		
t <sub>d(on)</sub>	Turn-On Time	V <sub>DD</sub> =-10V, R <sub>L</sub> =2.3 Ω, I <sub>D</sub> =-2.4A V <sub>GEN</sub> =-4.5V, R <sub>G</sub> =1Ω		0.2	0.3	μs
t <sub>r</sub>				1.0	1.5	
t <sub>d(off)</sub>	Turn-Off Time			4.0	6.0	
t <sub>f</sub>				2.0	3.0	

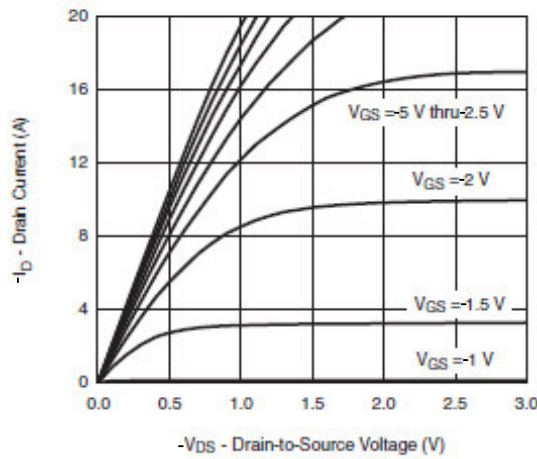
## Typical Performance Characteristics



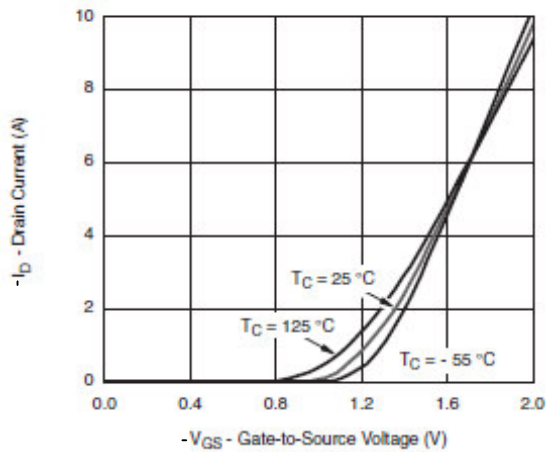
Gate Current vs. Gate-Source Voltage



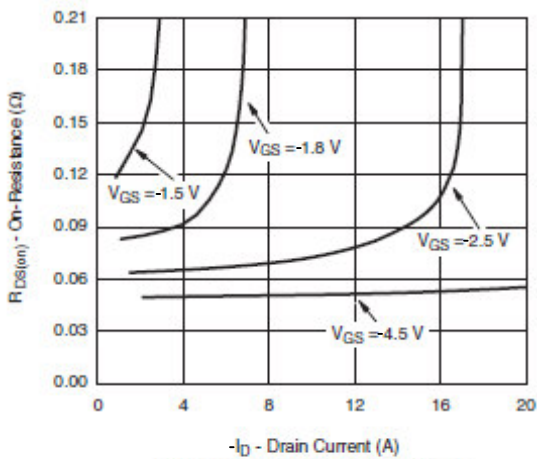
Gate Current vs. Gate-Source Voltage



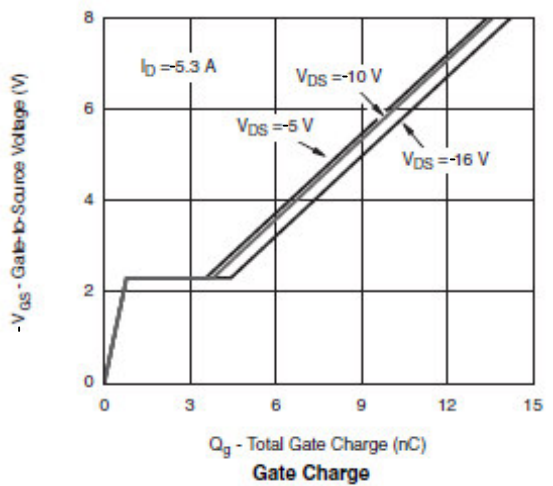
Output Characteristics



Transfer Characteristics

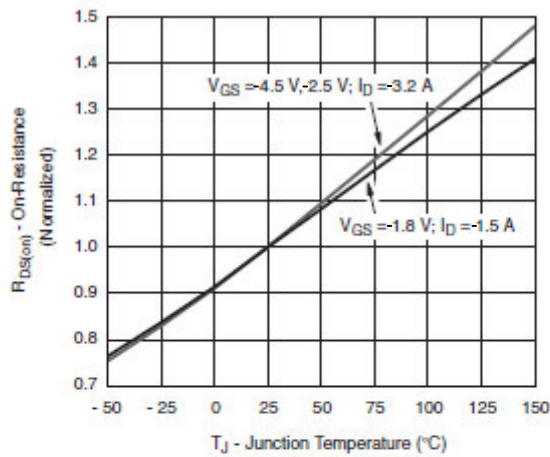


On-Resistance vs. Drain Current

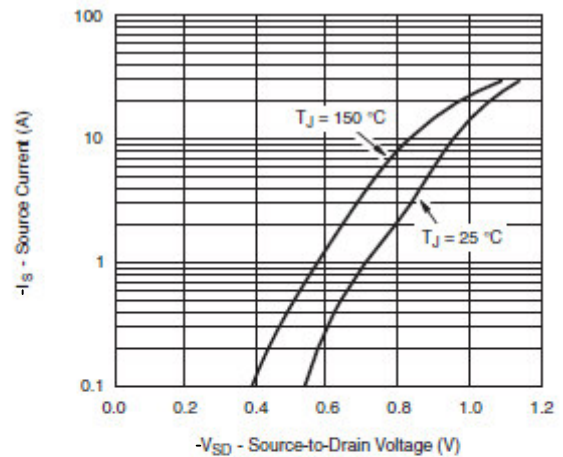


Gate Charge

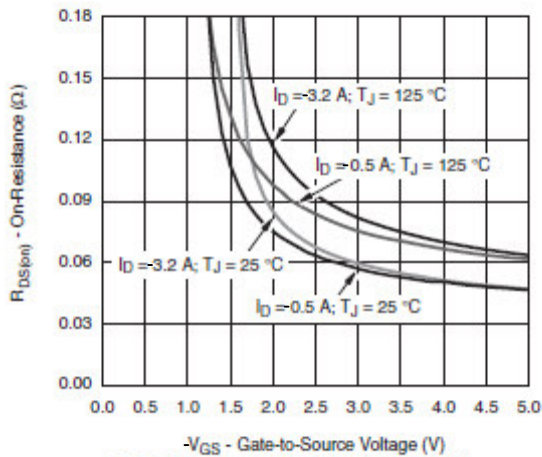
## Typical Performance Characteristics (continue)



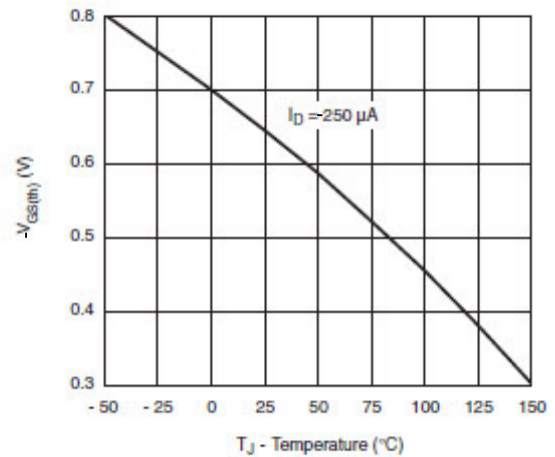
On-Resistance vs. Junction Temperature



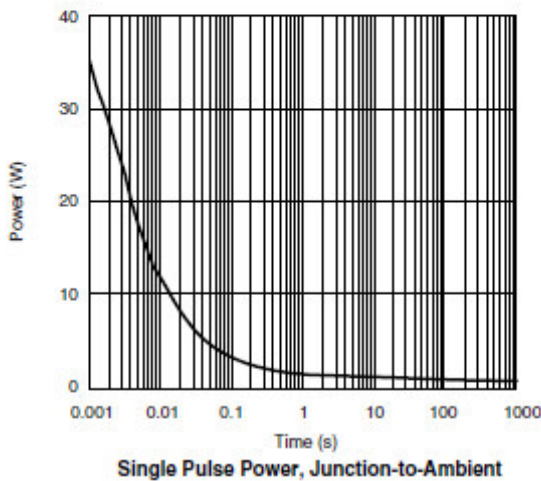
Source-Drain Diode Forward Voltage



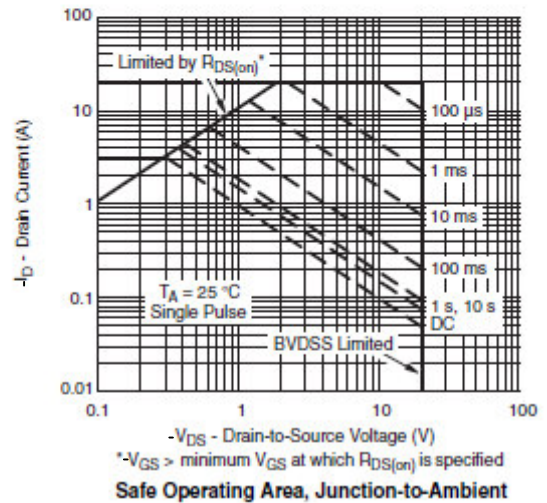
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



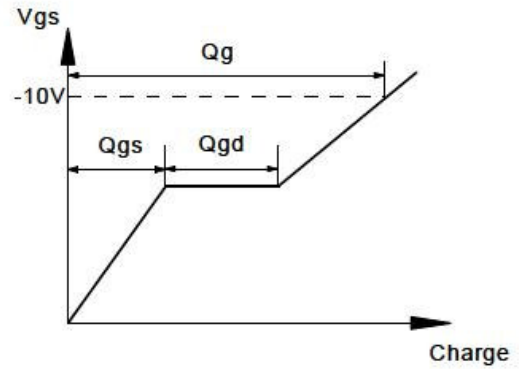
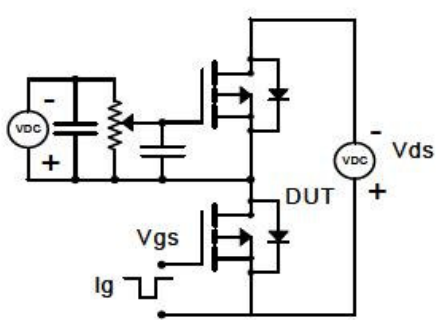
Single Pulse Power, Junction-to-Ambient



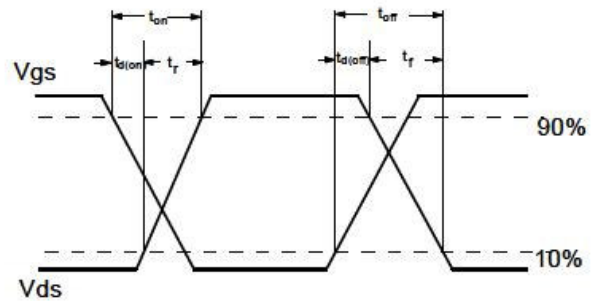
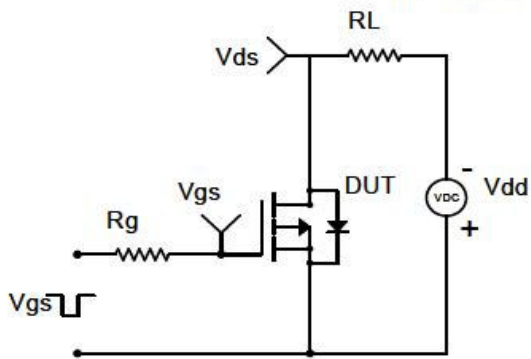
Safe Operating Area, Junction-to-Ambient

## Typical Performance Characteristics (continue)

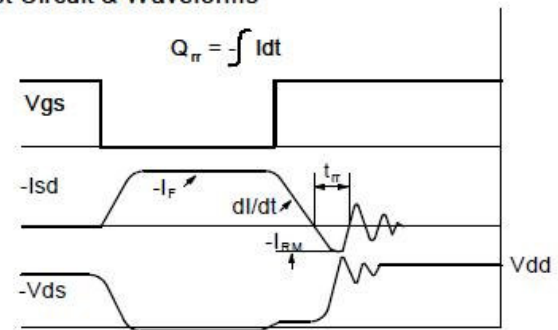
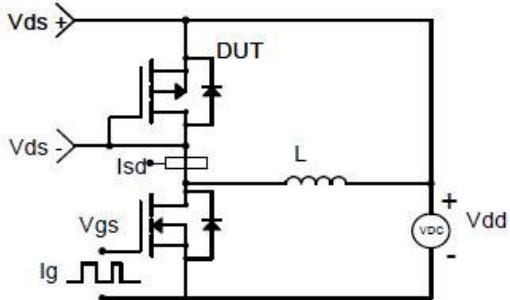
### Gate Charge Test Circuit & Waveform



### Resistive Switching Test Circuit & Waveforms

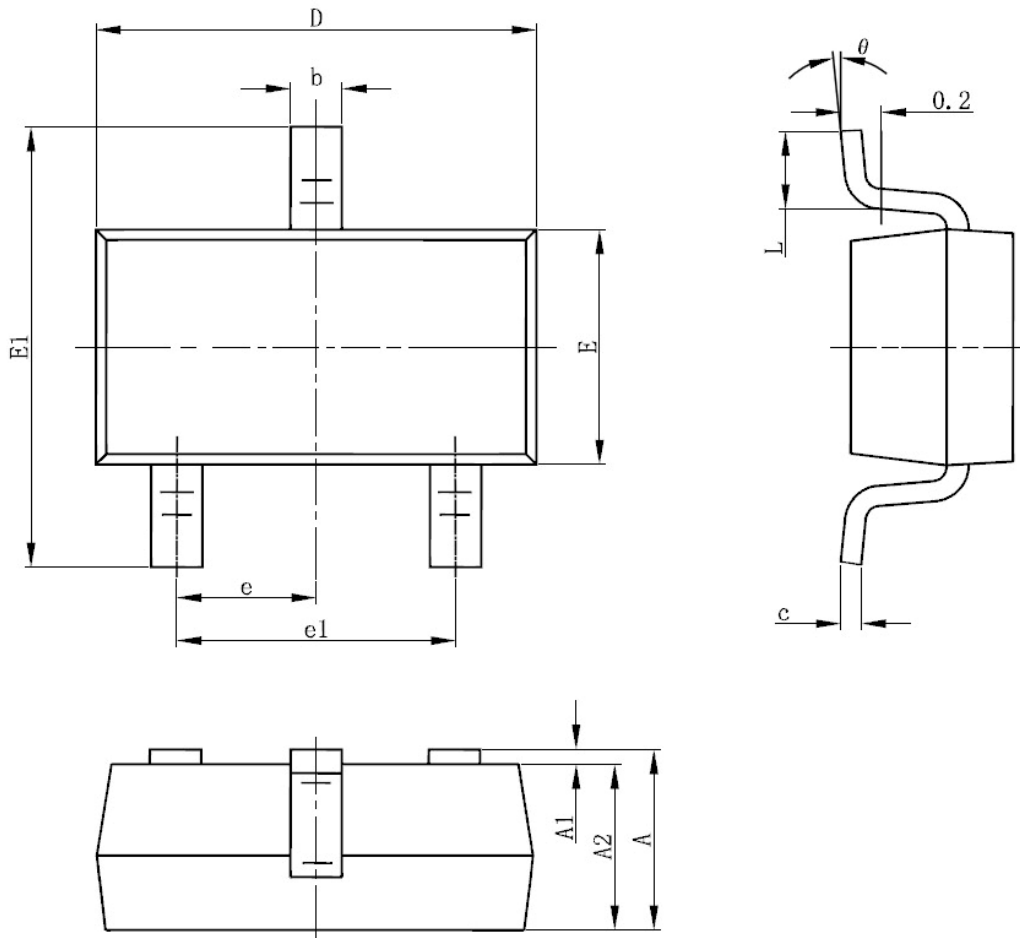


### Diode Recovery Test Circuit & Waveforms



## Package Dimension

### SOT-23 PLASTIC PACKAGE







#### Dimensions

SYMBOL	Millimeters		Inches	
	MIN	MAX	MIN	MAX
A	0.9	1.2	0.035	0.043
A1	0	0.1	0	0.004
A2	0.9	1.1	0.035	0.039
b	0.3	0.5	0.012	0.020
c	0.08	0.15	0.003	0.006
D	2.8	3	0.110	0.118
E	1.2	1.4	0.047	0.055
E1	2.25	2.55	0.089	0.100
e	0.950 (TYP)		0.037 (TYP)	
e1	1.8	2	0.071	0.079
L	0.55REF		0.022REF	
L1	0.3	0.5	0.012	0.020
Q	0°	8°	0°	6°





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