

# GSM2304AS

## 30V N-Channel Enhancement Mode MOSFET

### Product Description

GSM2304AS, 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.

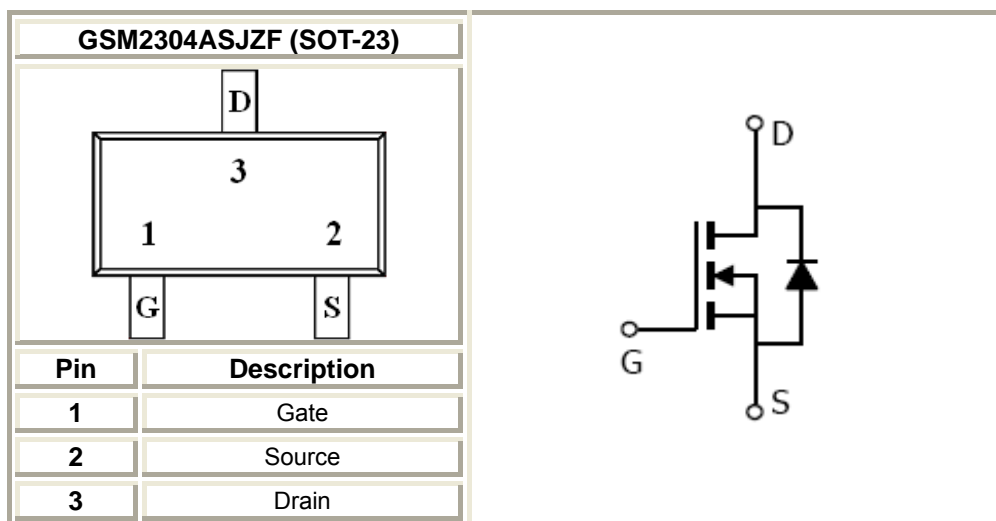
### Features

- 30V/2.4A,  $R_{DS(ON)}=65m\Omega@V_{GS}=10V$
- 30V/2.0A,  $R_{DS(ON)}=90m\Omega@V_{GS}=4.5V$
- Super high density cell design for extremely low  $R_{DS(ON)}$
- SOT-23 package design

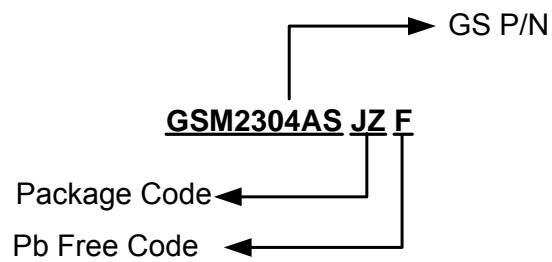
### Applications

- Power Management in Note book
- LED Display
- DC-DC System
- LCD Panel

### Packages & Pin Assignments

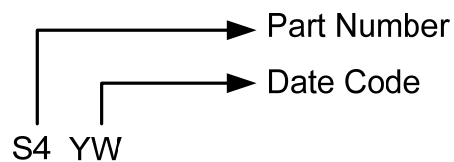


## Ordering Information



Part Number	Package	Quantity Reel
GSM2304ASJZF	SOT-23	3000 PCS

## Marking Information



## Absolute Maximum Ratings

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

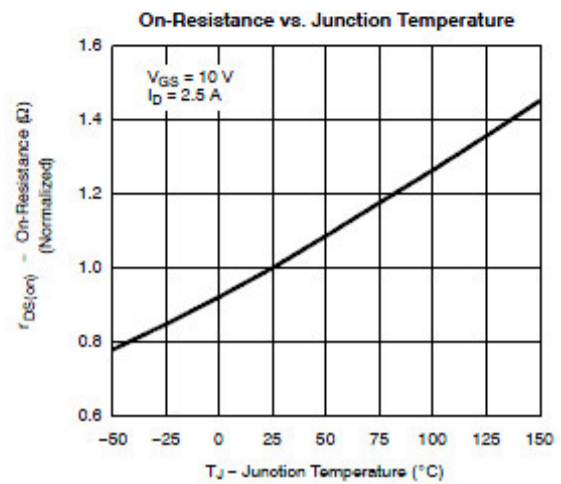
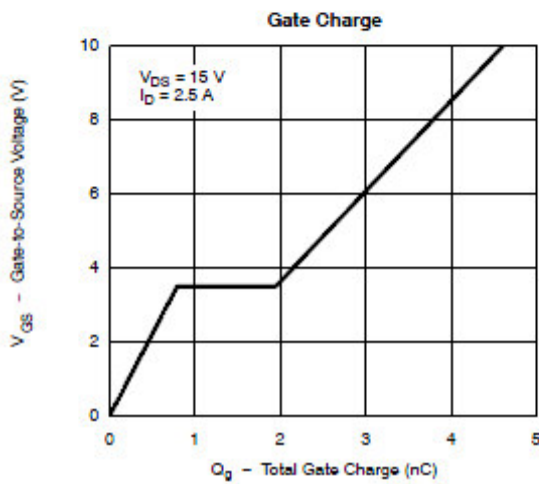
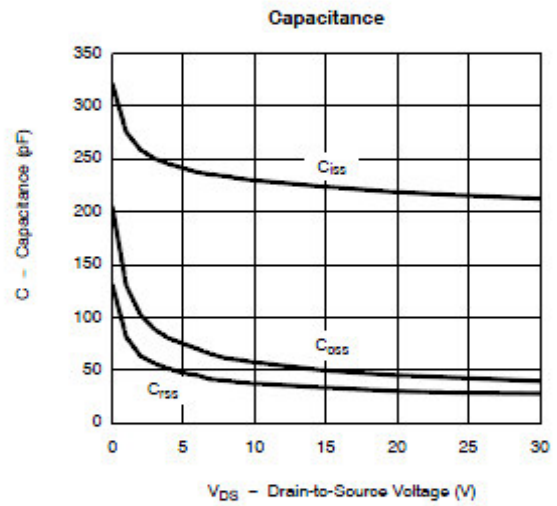
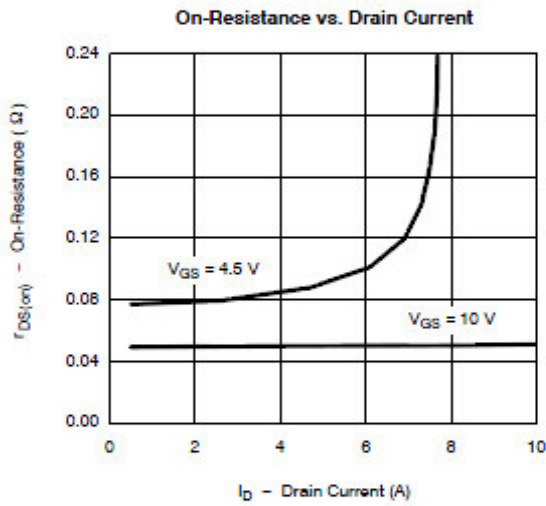
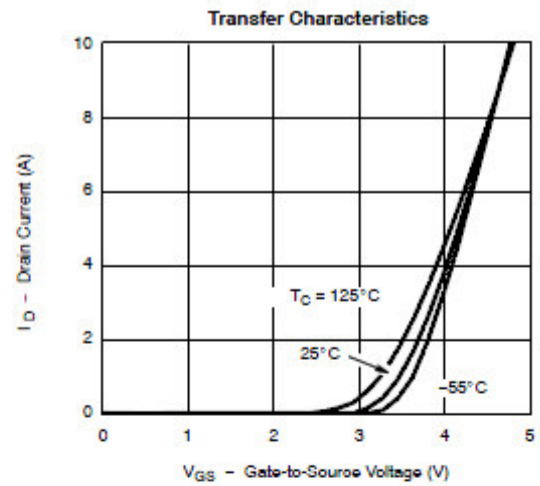
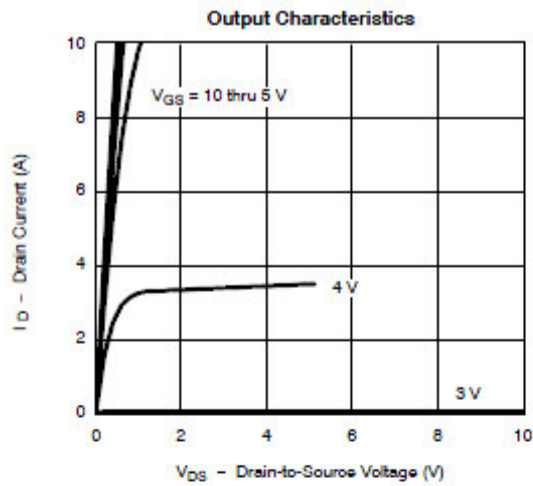
Symbol	Parameter	Typical	Unit
V <sub>DSS</sub>	Drain-Source Voltage	30	V
V <sub>GSS</sub>	Gate –Source Voltage	±20	V
I <sub>D</sub>	Continuous Drain Current(T <sub>J</sub> =150°C)	T <sub>A</sub> =25°C	2.4
		T <sub>A</sub> =70°C	2.0
I <sub>DM</sub>	Pulsed Drain Current	20	A
I <sub>S</sub>	Continuous Source Current(Diode Conduction)	1.5	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	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

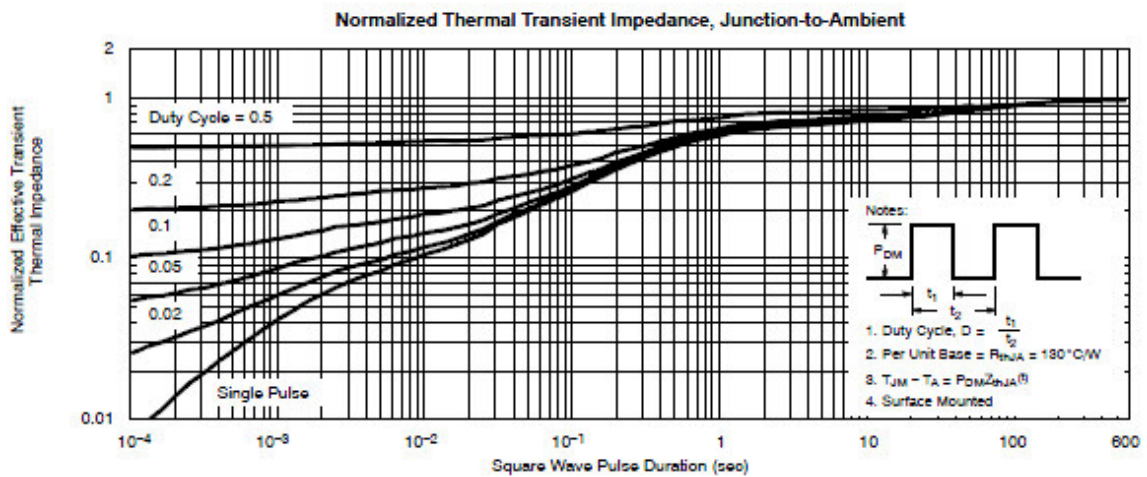
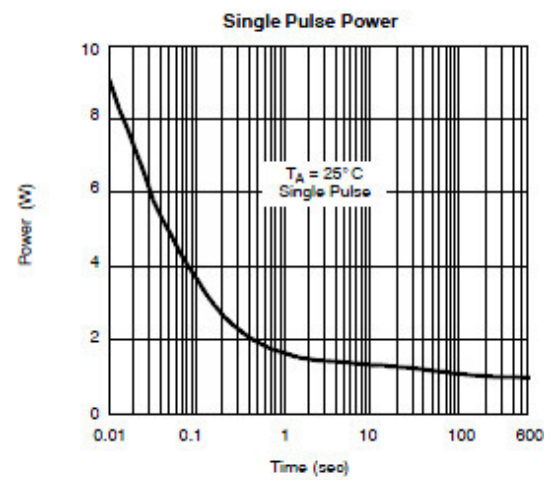
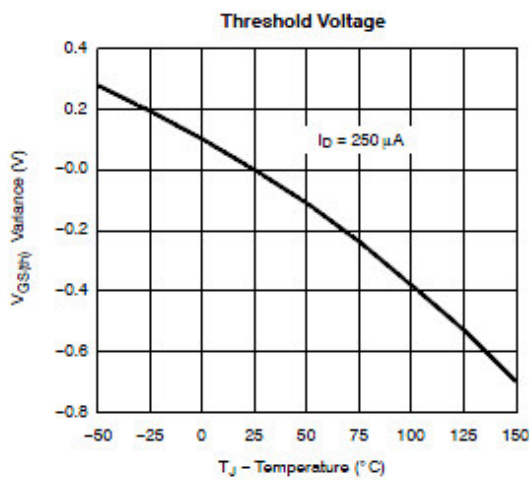
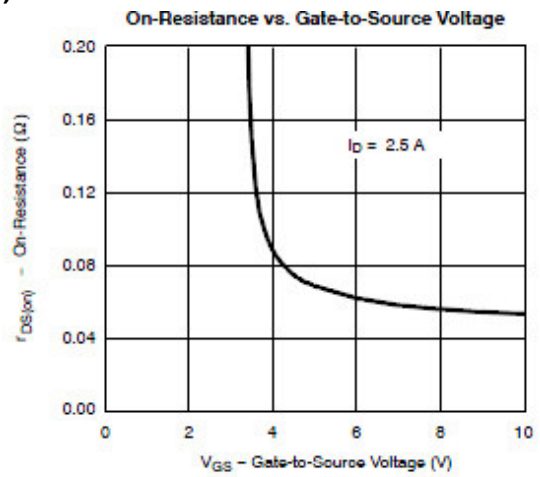
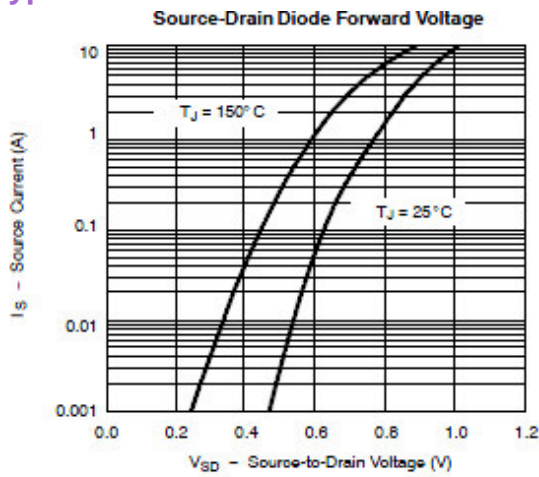
( $T_A=25^\circ\text{C}$  unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>Static</b>						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	30			V
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	1.5		2.0	
$I_{GSS}$	Gate Leakage Current	$V_{DS}=0V, V_{GS}=\pm 20V$			$\pm 100$	nA
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS}=24V, V_{GS}=0V$			1	uA
		$V_{DS}=24V, V_{GS}=0V, T_J=85^\circ\text{C}$			30	
$I_{D(on)}$	On-State Drain Current	$V_{DS}\geq 4.5V, V_{GS}=10V$	6			A
$R_{DS(on)}$	Drain-Source On-Resistance	$V_{GS}=10V, I_D=2.4A$		55	65	m $\Omega$
		$V_{GS}=4.5V, I_D=2.0A$		75	90	
$g_{FS}$	Forward Transconductance	$V_{DS}=4.5V, I_D=2.5A$		6		S
$V_{SD}$	Diode Forward Voltage	$I_S=1.0A, V_{GS}=0V$		0.8	1.2	V
<b>Dynamic</b>						
$C_{iss}$	Input Capacitance	$V_{DS}=15V, V_{GS}=0V, f=1\text{MHz}$		200		pF
$C_{oss}$	Output Capacitance			50		
$C_{rss}$	Reverse Transfer Capacitance			25		
$Q_g$	Total Gate Charge	$V_{DS}=15V, V_{GS}=10V, I_D=2.5A$		2.0	3.6	nC
$Q_{gs}$	Gate-Source Charge			0.8		
$Q_{gd}$	Gate-Drain Charge			1.0		
$t_{d(on)}$	Turn-On Time	$V_{DD}=15V, R_L=15\Omega, I_D=1.0A, V_{GEN}=10V, R_G=6\Omega$		7	10	ns
$t_r$				10	18	
$t_{d(off)}$	Turn-Off Time			18	25	
$t_f$				10	18	

## Typical Performance Characteristics

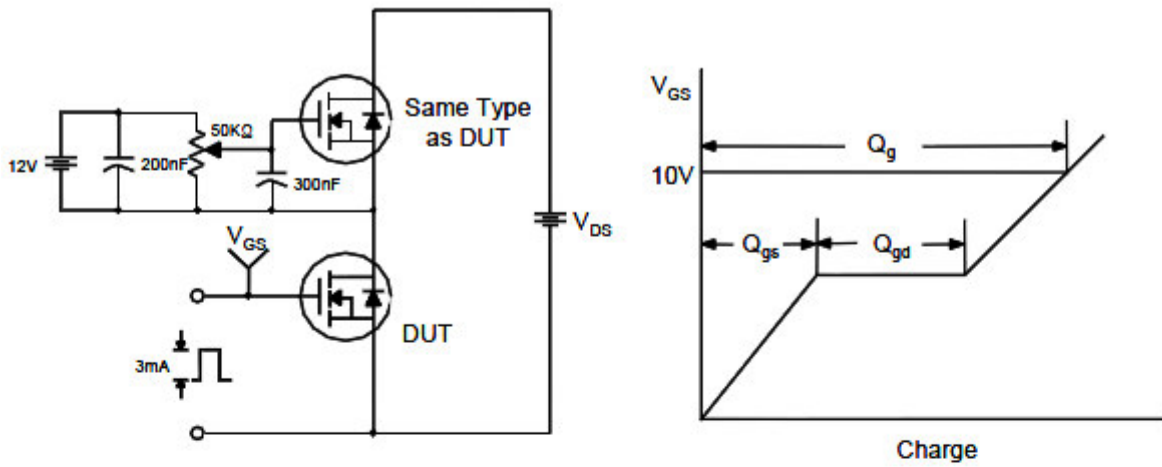


## Typical Performance Characteristics (continue)

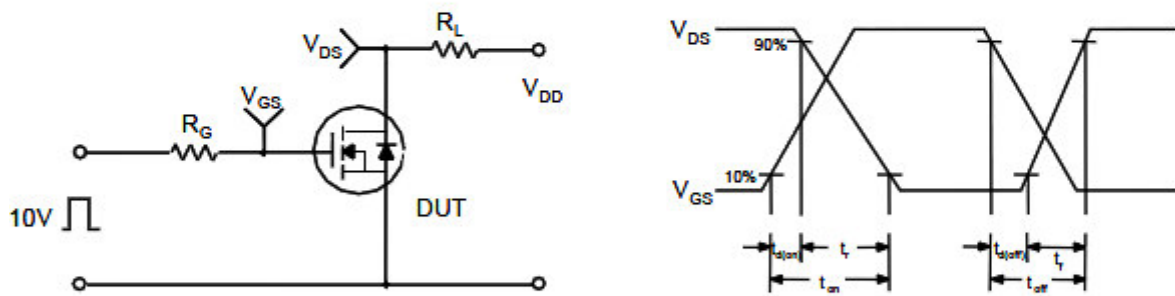


## Typical Performance Characteristics (continue)

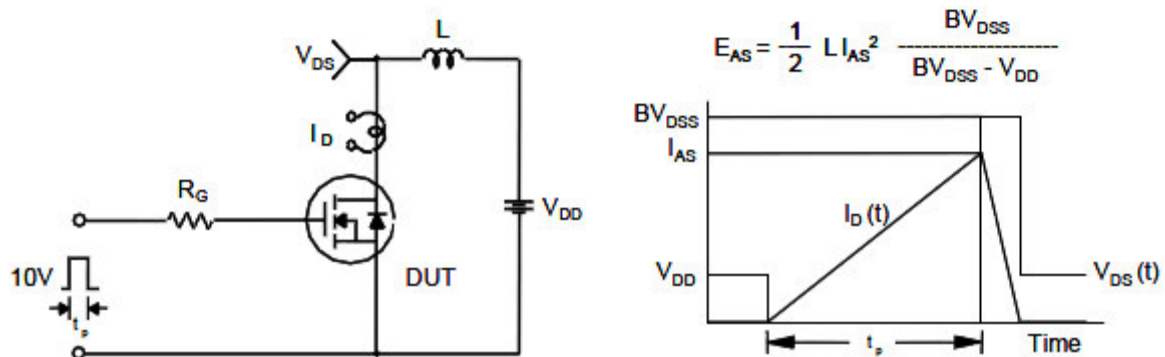
### Gate Charge Test Circuit & Waveform



### Resistive Switching Test Circuit & Waveforms

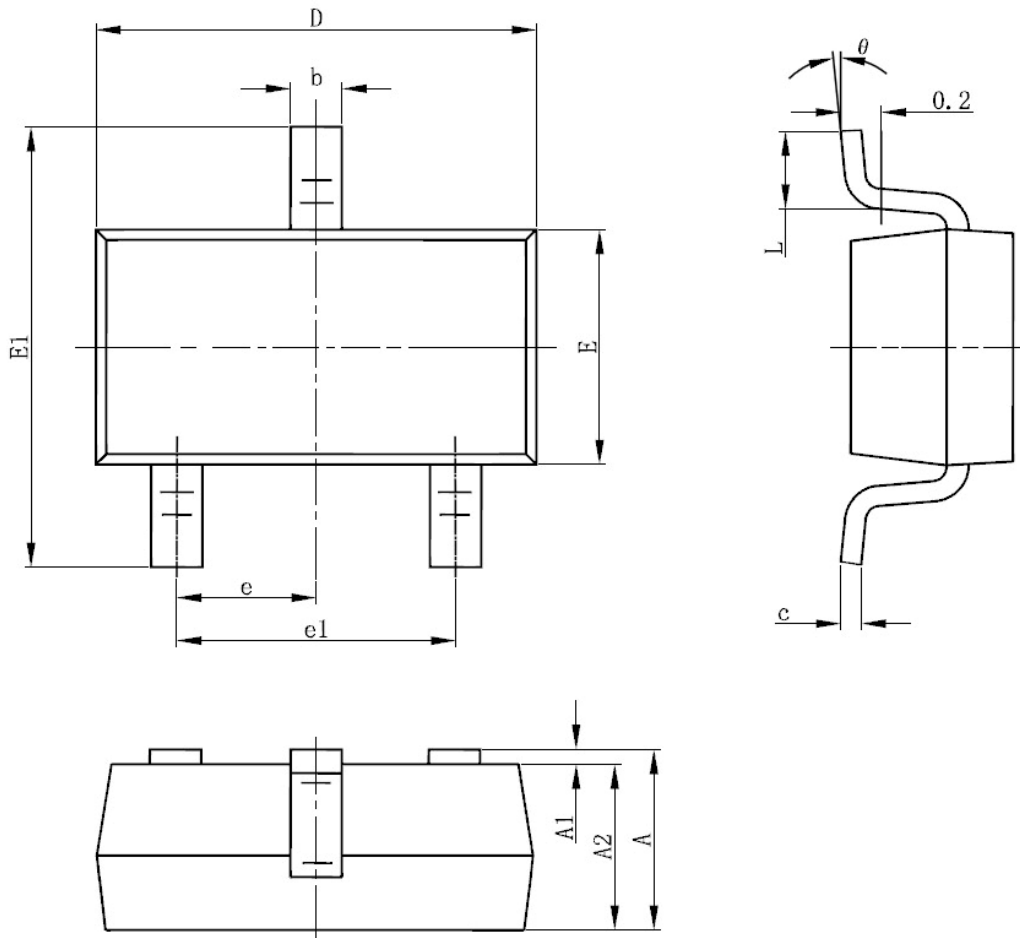


### Unclamped Inductive Switching Test Circuit & Waveforms



## Package Dimension

### SOT-23 PLASTIC PACKAGE







Dimensions				
SYMBOL	Millimeters		Inches	
	MIN	MAX	MIN	MAX
A	0.9	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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