GSM8205

20V N-Channel Enhancement Mode MOSFET

Product Description

GSM8205, 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

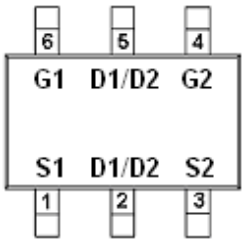
- 20V/5A,$R_{DS(ON)}$=29mΩ@V_{GS}=4.5V
- 20V/3.2A,$R_{DS(ON)}$=37mΩ@V_{GS}=2.5V
- 20V/2.4A,$R_{DS(ON)}$=50mΩ@V_{GS}=1.8V
- Super high density cell design for extremely low $R_{DS\ (ON)}$
- Exceptional on-resistance and maximum DC current capability
- TSOP-6 & TSSOP-8P package design

Applications

- Load Switch
- Portable Equipment
- Battery Powered System

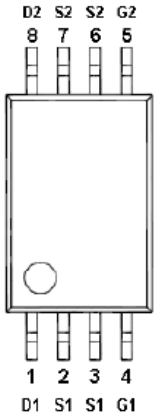
Packages & Pin Assignments

GSM8205TSF(TSOP-6)

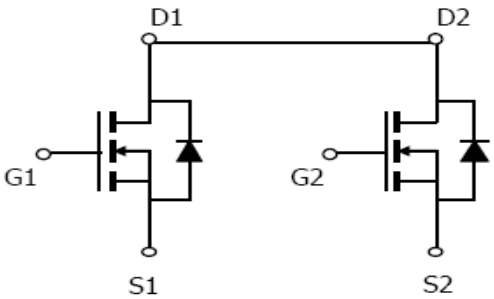


Pin No	Function	Pin No	Function
1	Source 1	**4**	Gate 2
2	Drain 1/2	**5**	Drain 1/2
3	Source 2	**6**	Gate 1
-	-	**-**	-

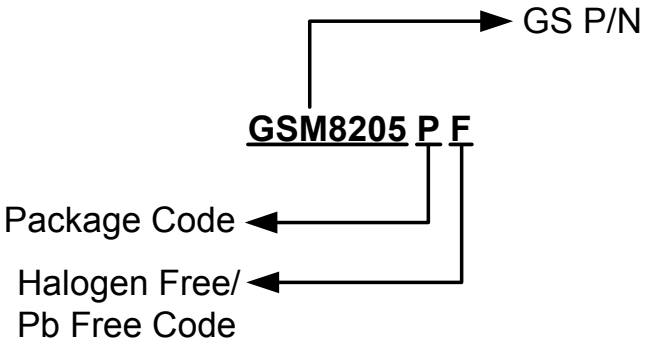
GSM8205TSSF(TSSOP-8P)



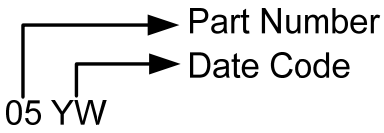
Pin No	Function	Pin No	Function
1	Drain 1/2	**5**	Gate 2
2	Source 1	**6**	Source 2
3	Source 1	**7**	Source 2
4	Gate 1	**8**	Drain 1/2



Ordering Information



Marking Information



Part Number	Package	Part Marking
GSM8205TSF	TSOP-6	05YW
GSM8205TSSF	TSSOP-8P	8205YW

Absolute Maximum Ratings

(T_A=25ºC unless otherwise noted)

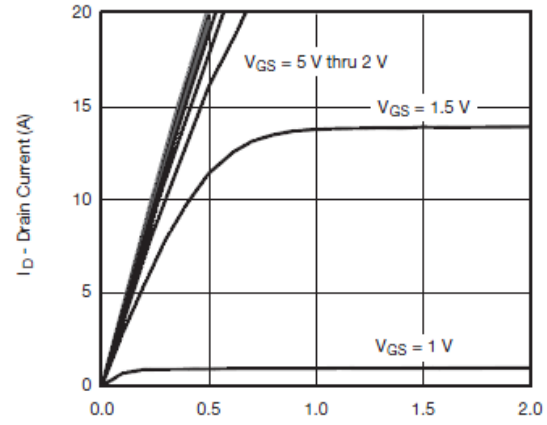
Symbol	Parameter		Typical	Unit
V_{DSS}	Drain-Source Voltage		20	V
V_{GSS}	Gate –Source Voltage		±12	V
I_D	Continuous Drain Current(TJ=150℃)	T_A=25℃	5	A
		T_A=70℃	3.2	
I_{DM}	Pulsed Drain Current		20	A
I_S	Continuous Source Current(Diode Conduction)		1.6	A
P_D	Power Dissipation	T_A=25℃	2.0	W
		T_A=70℃	1.3	
T_J	Operating Junction Temperature		150	ºC
T_{STG}	Storage Temperature Range		-55/150	ºC
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient		120	ºC/W

Electrical Characteristics

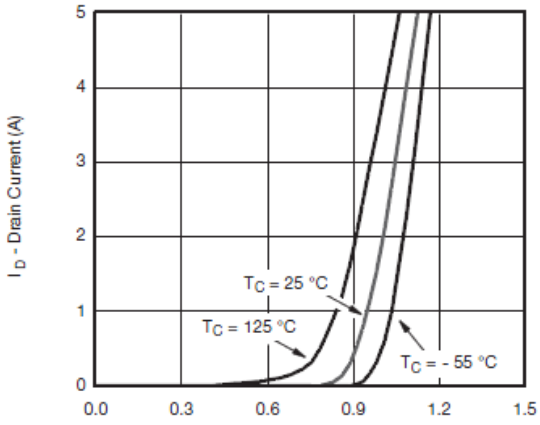
(T_A=25°C unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ	Max.	Unit
Static						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V,I_D=250uA	20			V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=250uA	0.4		0.8	
I_{GSS}	Gate Leakage Current	V_{DS}=0V,V_{GS}=±12V			±100	nA
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=16V,V_{GS}=0V			1	uA
		V_{DS}=16V,V_{GS}=0V T_J=85℃			10	
$I_{D(on)}$	On-State Drain Current	V_{DS}≧5V,V_{GS}=4.5V	6			A
		V_{DS}≧5V,V_{GS}=2.5V	4			
$R_{DS(on)}$	Drain-Source On-Resistance	V_{GS}=4.5V,I_D=5A		25	29	mΩ
		V_{GS}=2.5V,I_D=3.2A		30	37	
		V_{GS}=1.8V,I_D=2.4A		45	50	
g_{FS}	Forward Transconductance	V_{DS}=5V,I_D=3.6A		10		S
V_{SD}	Diode Forward Voltage	I_S=1.6A,V_{GS}=0V		0.85	1.2	V
Dynamic						
Q_g	Total Gate Charge	V_{DS}=10V,V_{GS}=4.5V, I_D=4.0A		8.2	14	nC
Q_{gs}	Gate-Source Charge			1.2		
Q_{gd}	Gate-Drain Charge			1.0		
C_{iss}	Input Capacitance	V_{DS}=10V,V_{GS}=0V, f=1MHz		850		pF
C_{oss}	Output Capacitance			120		
C_{rss}	Reverse Transfer Capacitance			60		
$t_{d(on)}$	Turn-On Time	V_{DD}=10V,R_L=2.2Ω, I_D=4.0A,V_{GEN}=4.5V, R_G=1Ω		10	16	ns
t_r				16	25	
$t_{d(off)}$	Turn-Off Time			31	45	
t_f				10	16	

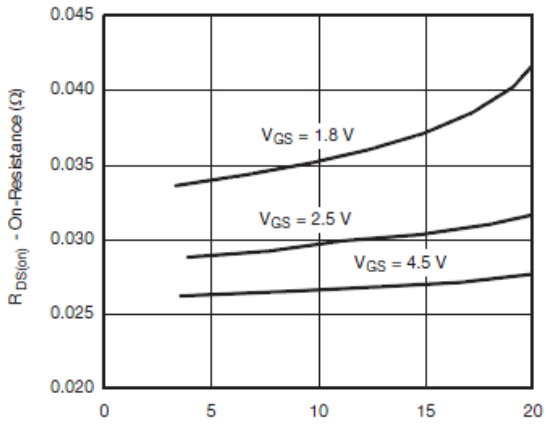
Typical Performance Characteristics



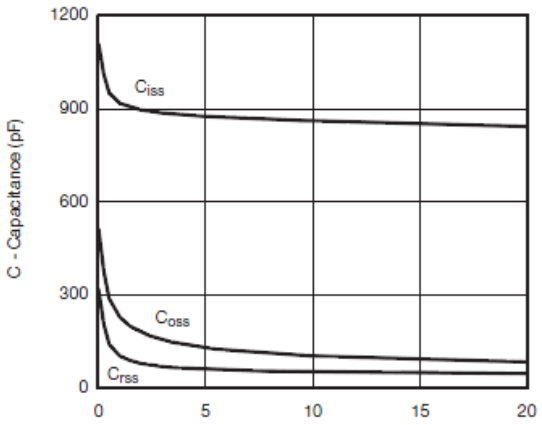
Output Characteristics



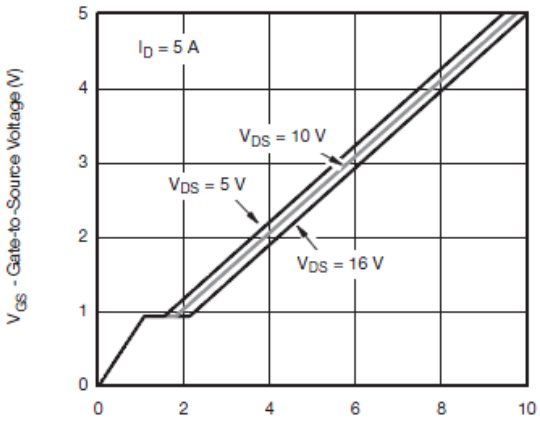
Transfer Characteristics



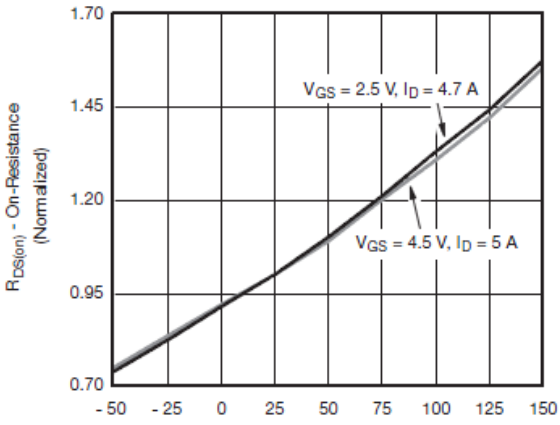
On-Resistance vs. Drain Current and Gate Voltage



Capacitance

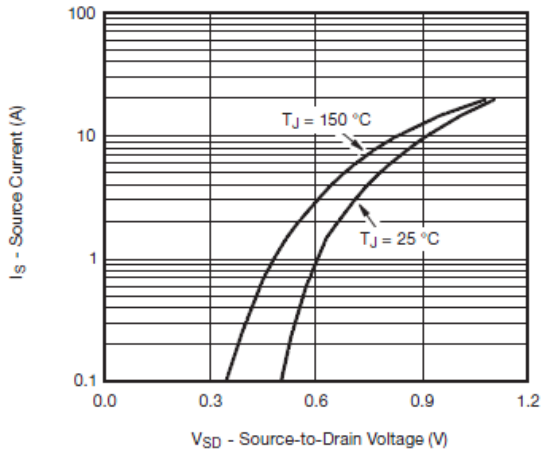


Gate Charge

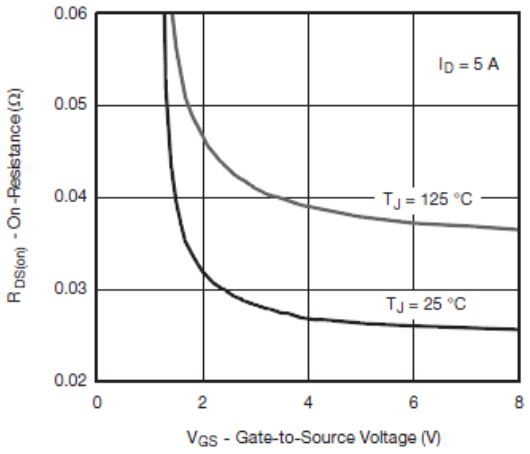


On-Resistance vs. Junction Temperature

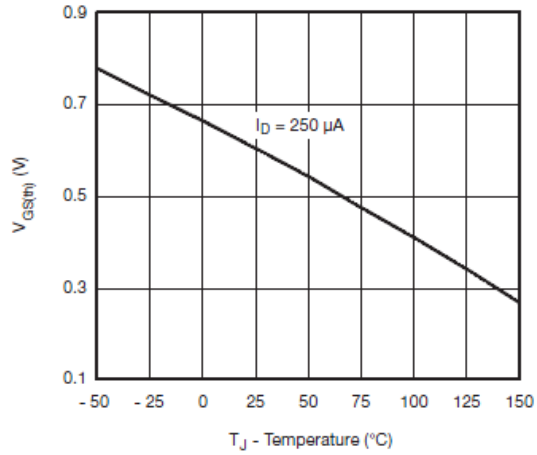
Typical Performance Characteristics (continue)



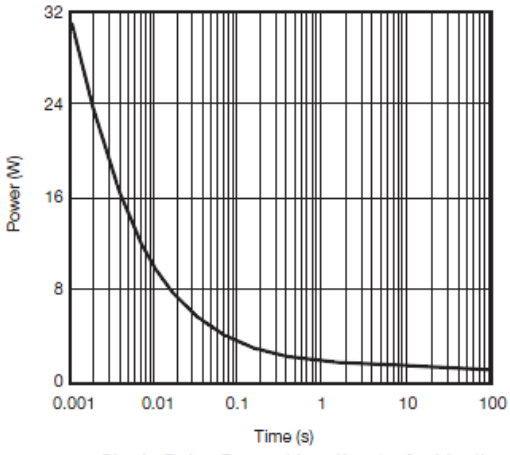
Source-Drain Diode Forward Voltage



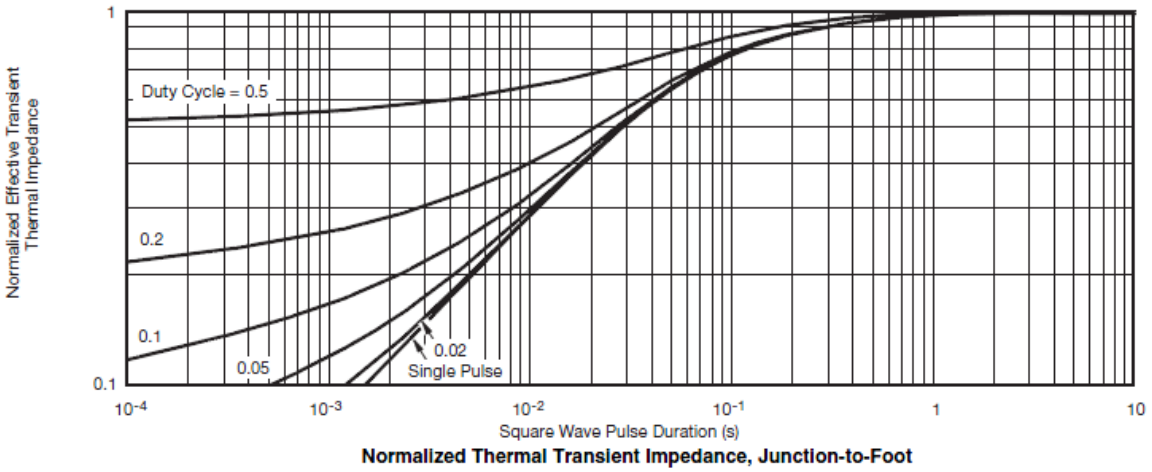
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



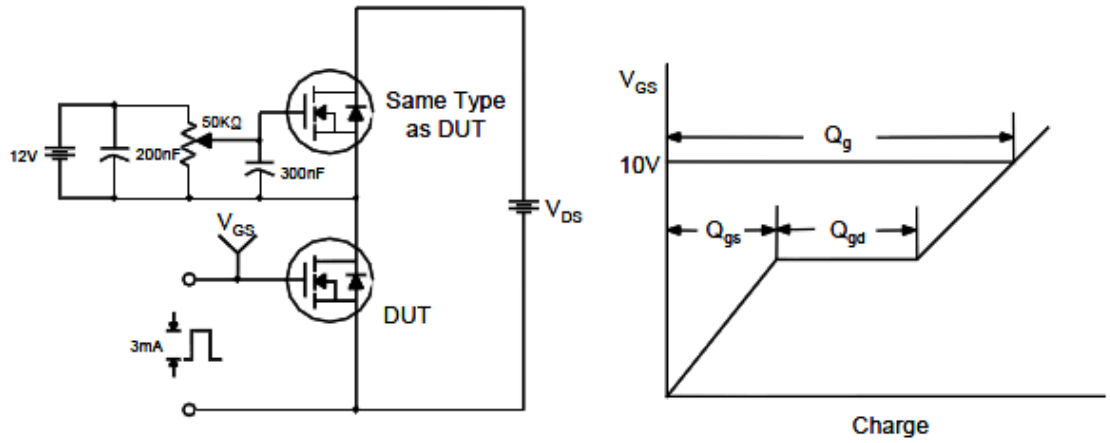
Single Pulse Power (Junction-to-Ambient)



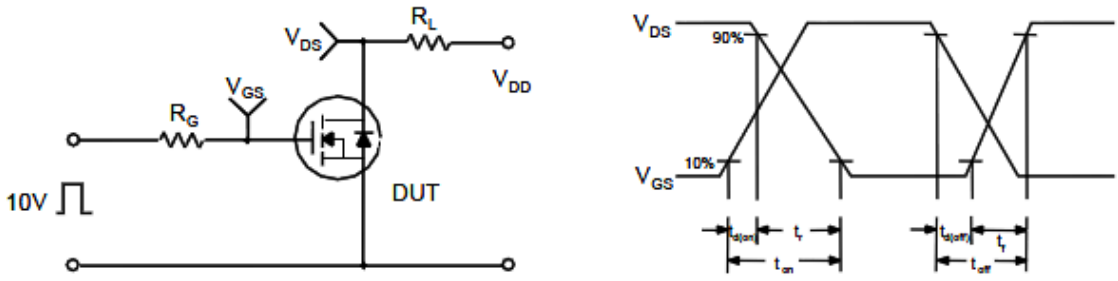
Normalized Thermal Transient Impedance, Junction-to-Foot

Typical Characteristics

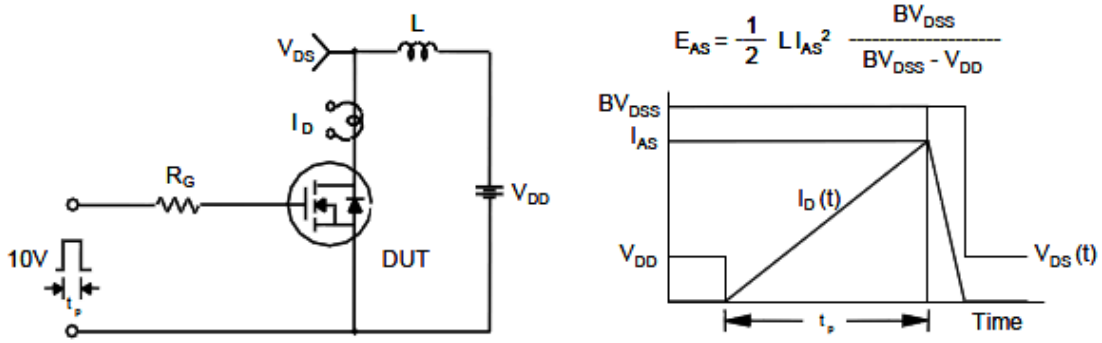
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

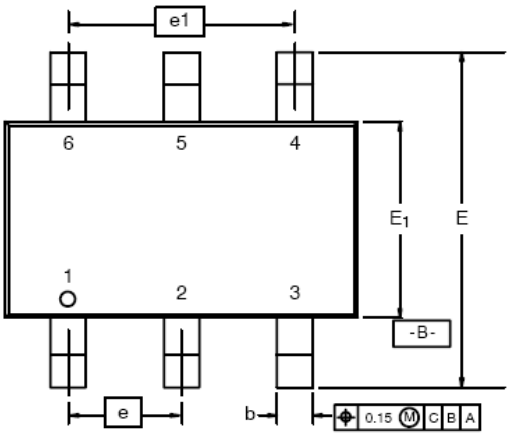


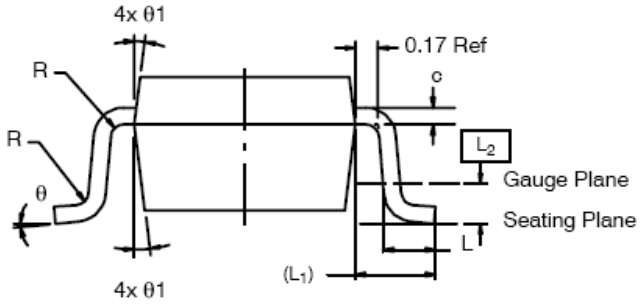
Unclamped Inductive Switching Test Circuit & Waveforms



Package Dimension

TSOP-6 PLASTIC PACKAGE

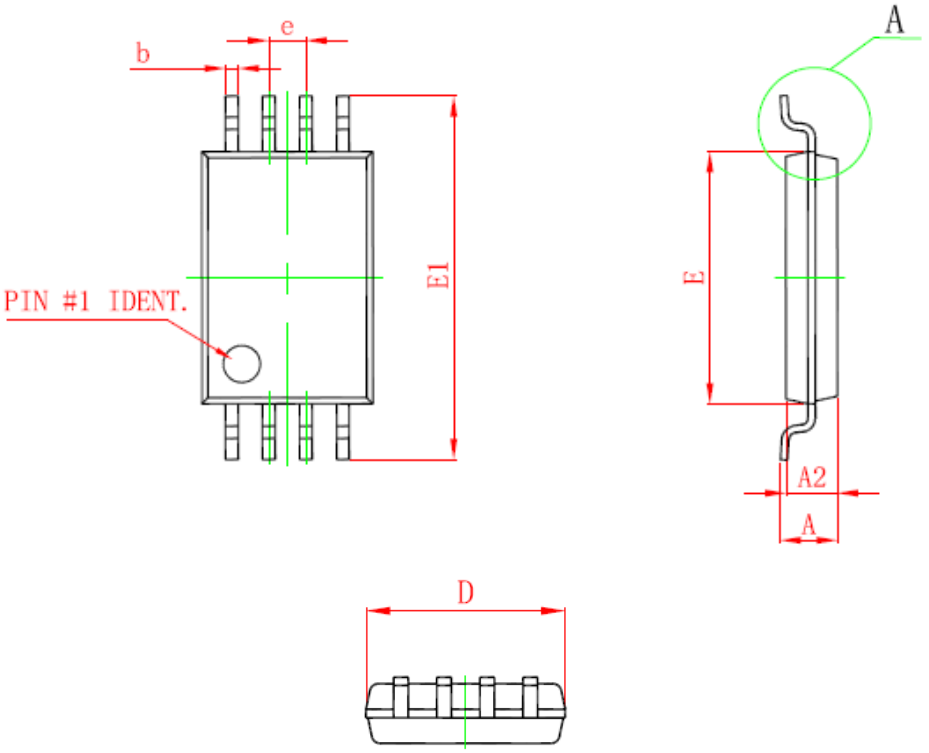




Dimensions

SYMBOL	Millimeters			Inches		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.91	-	1.10	0.036	-	0.043
A_1	0.01	-	0.10	0.0004	-	0.004
A_2	0.90	-	1.00	0.035	0.038	0.039
b	0.30	0.32	0.45	0.012	0.013	0.018
c	0.10	0.15	0.20	0.004	0.006	0.008
D	2.95	3.05	3.10	0.116	0.120	0.122
E	2.70	2.85	2.98	0.106	0.112	0.117
E_1	1.55	1.65	1.70	0.061	0.065	0.067
e	1.00 BSC			0.0394 BSC		
e_1	1.90	2.00	2.10	0.075	0.080	0.085
L	0.35	-	0.50	0.014	-	0.020
L_1	0.60 Ref			0.024 Ref		
L_2	0.25 BSC			0.010 BSC		
R	0.10	-	-	0.004	-	-
θ	0°	4°	8°	0°	4°	8°
$θ_1$	7° Nom			7° Nom		

TSSOP-8P PLASTIC PACKAGE



Dimensions				
SYMBOL	Millimeters		Inches	
	MIN	MAX	MIN	MAX
D	2.900	3.100	0.114	0.122
E	4.300	4.500	0.169	0.177
b	0.190	0.300	0.007	0.012
c	0.090	0.200	0.004	0.008
E1	6.250	6.550	0.246	0.258
A	-	1.100	-	0.043
A2	0.800	1.000	0.031	0.039
A1	0.020	0.150	0.001	0.006
e	0.65 BSC		0.026 BSC	
L	0.500	0.700	0.020	0.028
H	0.25 TYP		0.01 TYP	
θ	1°	7°	1°	7°

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