

SI6954ADQ-T1-E3-VB Datasheet

Dual N-Channel MOSFET

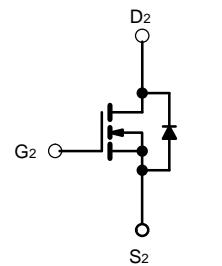
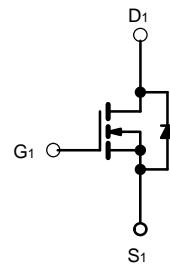
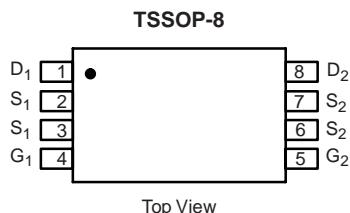
PRODUCT SUMMARY		
V_{DS} (V)	$R_{DS(on)}$ (Ω)	I_D (A)
20	0.012 at $V_{GS} = 4.5$ V	7.5
	0.017 at $V_{GS} = 2.5$ V	6.5

FEATURES

- Halogen-free Option Available
- Trench Power MOSFETs



RoHS*
COMPLIANT



ABSOLUTE MAXIMUM RATINGS $T_A = 25$ °C, unless otherwise noted

Parameter	Symbol	10 s	Steady State	Unit
Drain-Source Voltage	V_{DS}	20	± 12	V
Gate-Source Voltage	V_{GS}			
Continuous Drain Current ($T_J = 150$ °C) ^a	$T_A = 25$ °C	7.5	6.2	A
	$T_A = 70$ °C			
Pulsed Drain Current	I_{DM}	22.5		A
Continuous Source Current (Diode Conduction) ^a	I_S	1.5	1.0	
Maximum Power Dissipation ^a	$T_A = 25$ °C	1.5	1.0	W
	$T_A = 70$ °C			
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 to 150		°C

THERMAL RESISTANCE RATINGS

Parameter	Symbol	Typ.	Max.	Unit
Maximum Junction-to-Ambient ^a	$t \le 10$ s	R_{thJA}	72	83
	Steady State		100	120
Maximum Junction-to-Foot (Drain)	R_{thJF}	55	70	°C/W

Notes:

a. Surface Mounted on FR4 board, $t \le 10$ s.

* Pb containing terminations are not RoHS compliant, exemptions may apply.

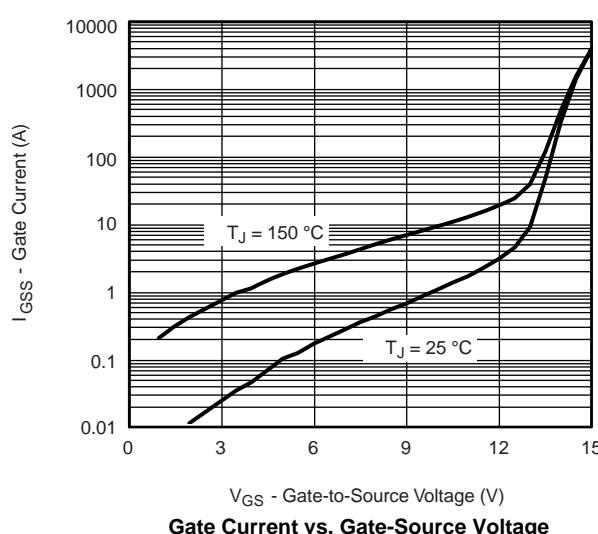
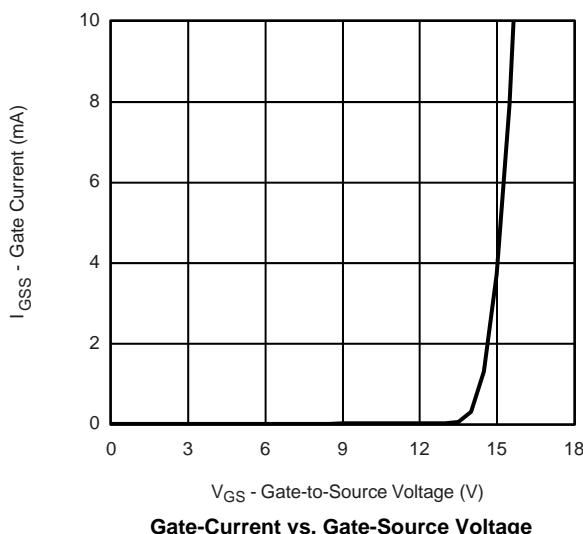
SPECIFICATIONS $T_J = 25^\circ\text{C}$, unless otherwise noted

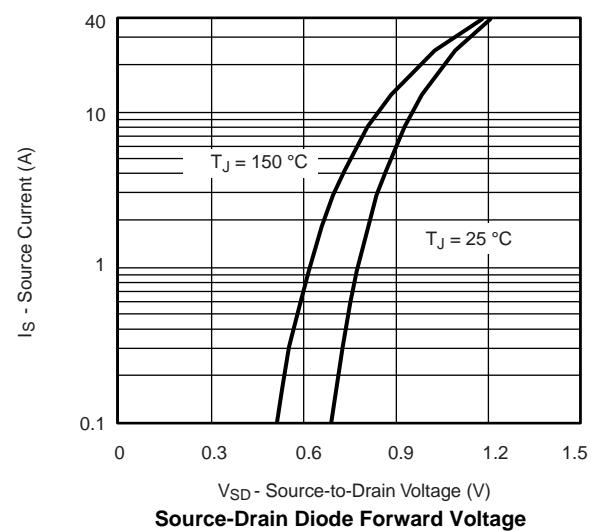
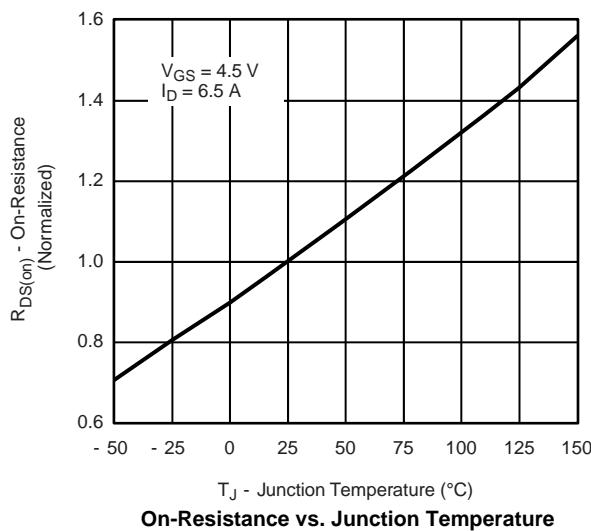
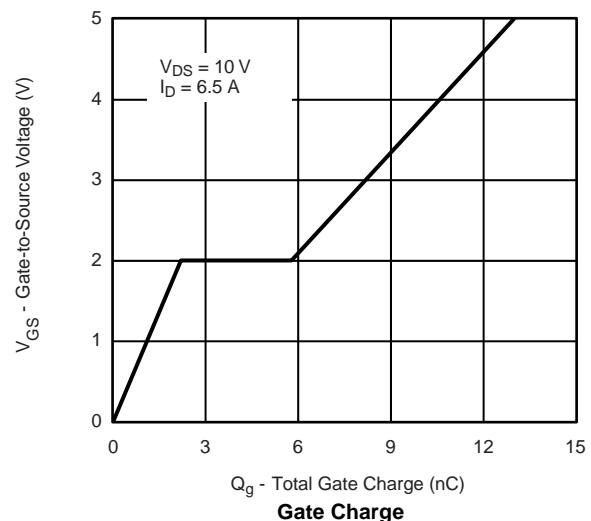
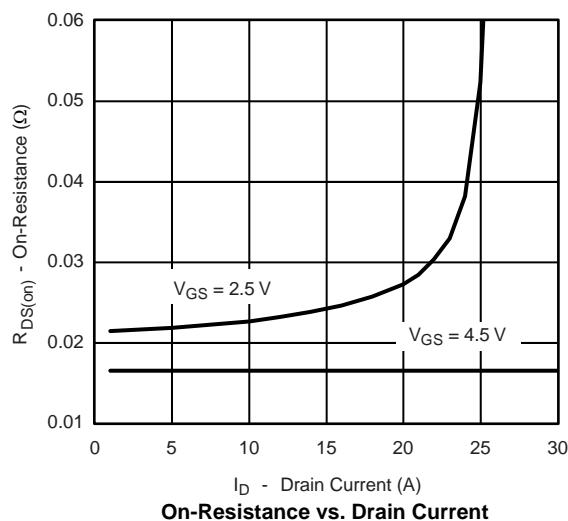
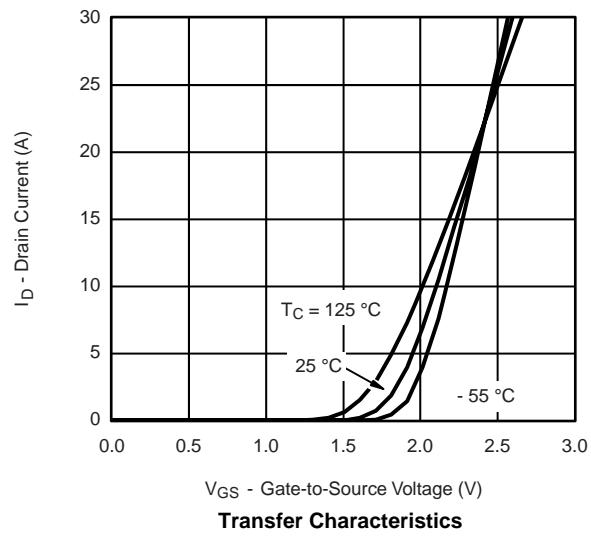
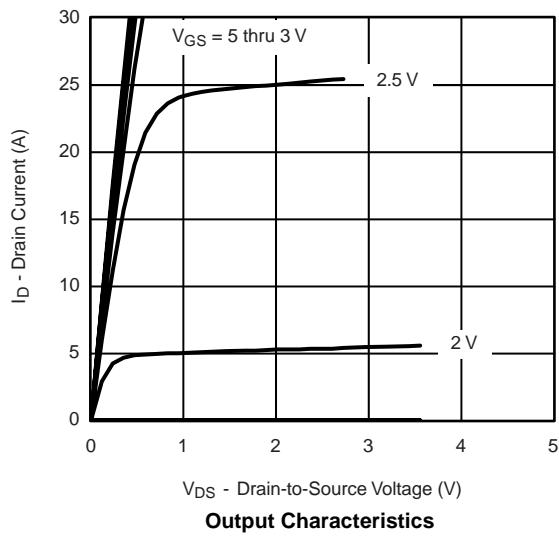
Parameter	Symbol	Test Conditions	Min.	Typ. ^a	Max.	Unit
Static						
Gate Threshold Voltage	$V_{GS(\text{th})}$	$V_{DS} = V_{GS}$, $I_D = 250 \mu\text{A}$		0.8		V
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0 \text{ V}$, $V_{GS} = \pm 4.5 \text{ V}$			± 200	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 20 \text{ V}$, $V_{GS} = 0 \text{ V}$		1		μA
		$V_{DS} = 20 \text{ V}$, $V_{GS} = 0 \text{ V}$, $T_J = 70^\circ\text{C}$		25		
On-State Drain Current ^b	$I_{D(\text{on})}$	$V_{DS} \leq 5 \text{ V}$, $V_{GS} = 4.5 \text{ V}$	30			A
Drain-Source On-State Resistance ^b	$R_{DS(\text{on})}$	$V_{GS} = 4.5 \text{ V}$, $I_D = 6.5 \text{ A}$		0.012		Ω
		$V_{GS} = 2.5 \text{ V}$, $I_D = 5.5 \text{ A}$		0.017		
Forward Transconductance ^b	g_{fs}	$V_{DS} = 10 \text{ V}$, $I_D = 6.5 \text{ A}$		30		S
Diode Forward Voltage ^b	V_{SD}	$I_S = 1.5 \text{ A}$, $V_{GS} = 0 \text{ V}$		0.71	1.2	V
Dynamic^a						
Total Gate Charge	Q_g	$V_{DS} = 10 \text{ V}$, $V_{GS} = 4.5 \text{ V}$, $I_D = 6.5 \text{ A}$		12	18	nC
Gate-Source Charge	Q_{gs}			2.2		
Gate-Drain Charge	Q_{gd}			3.6		
Turn-On Delay Time	$t_{d(\text{on})}$	$V_{DD} = 10 \text{ V}$, $R_L = 10 \Omega$ $I_D \geq 1 \text{ A}$, $V_{GEN} = 4.5 \text{ V}$, $R_G = 6 \Omega$		245	365	ns
Rise Time	t_r			330	495	
Turn-Off Delay Time	$t_{d(\text{off})}$			860	1300	
Fall Time	t_f			510	765	

Notes:

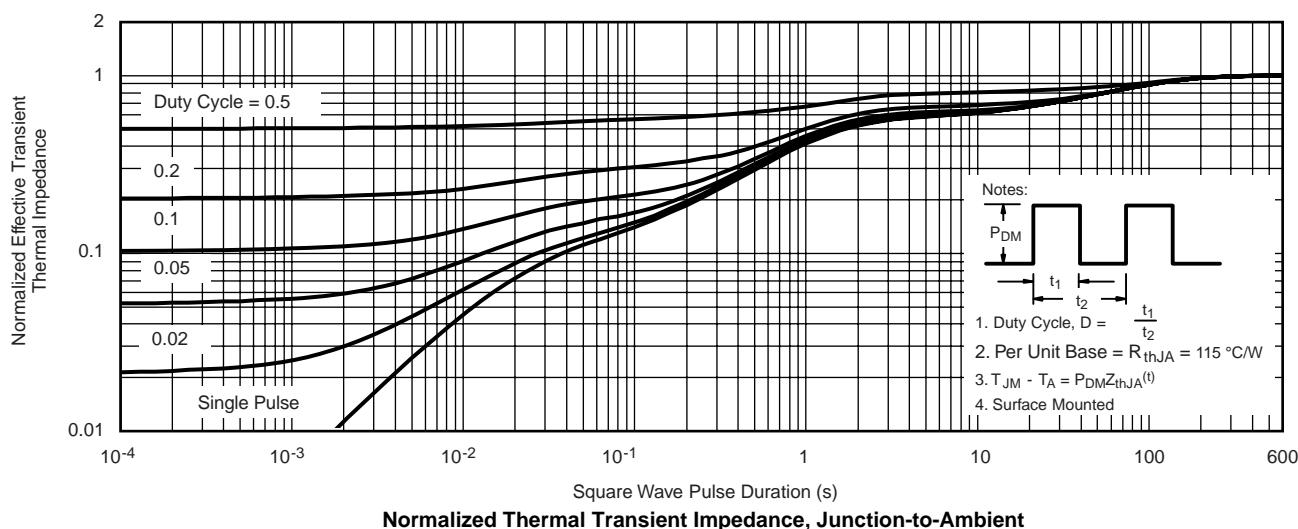
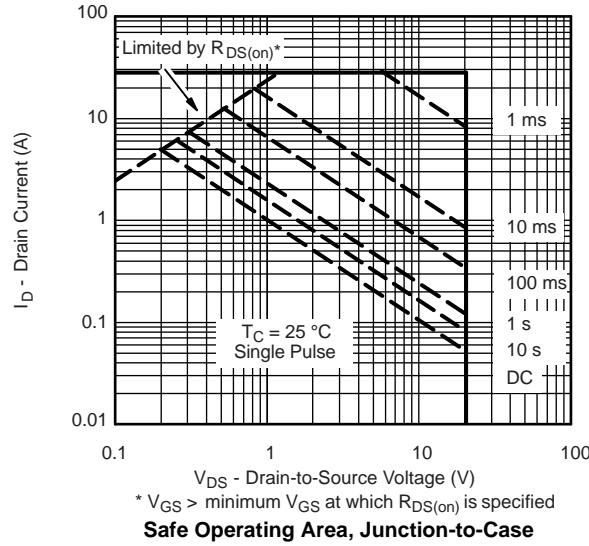
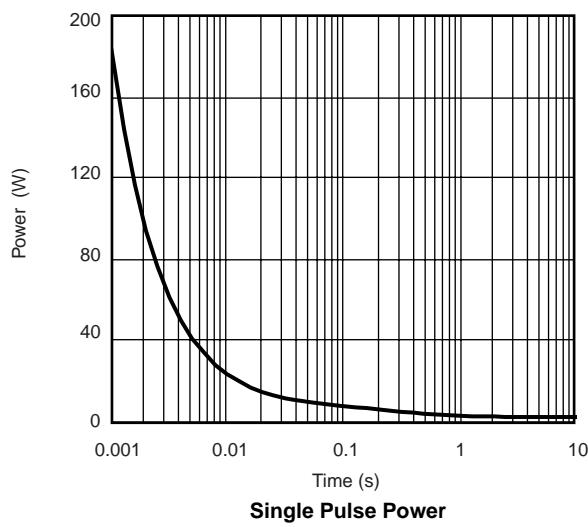
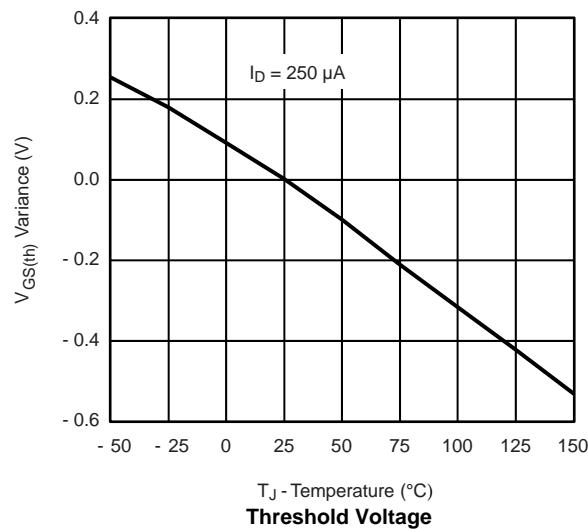
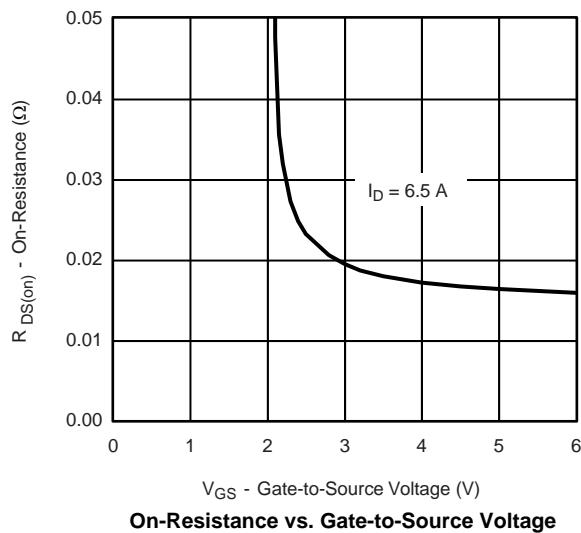
a. For design aid only; not subject to production testing.
 b. Pulse test; pulse width $\leq 300 \mu\text{s}$, duty cycle $\leq 2\%$.

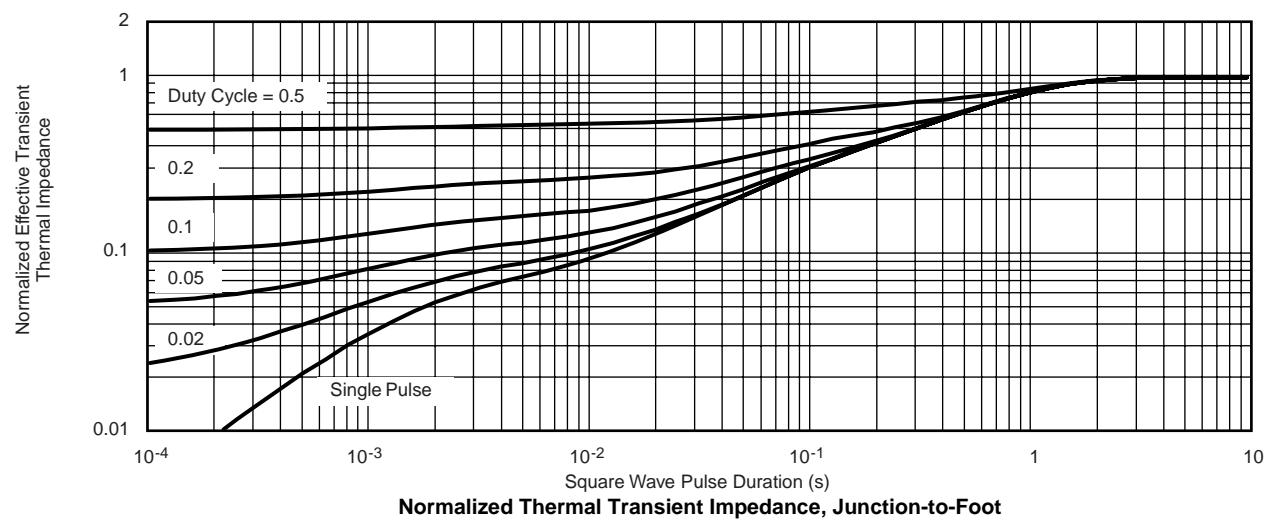
Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

TYPICAL CHARACTERISTICS 25°C , unless otherwise noted


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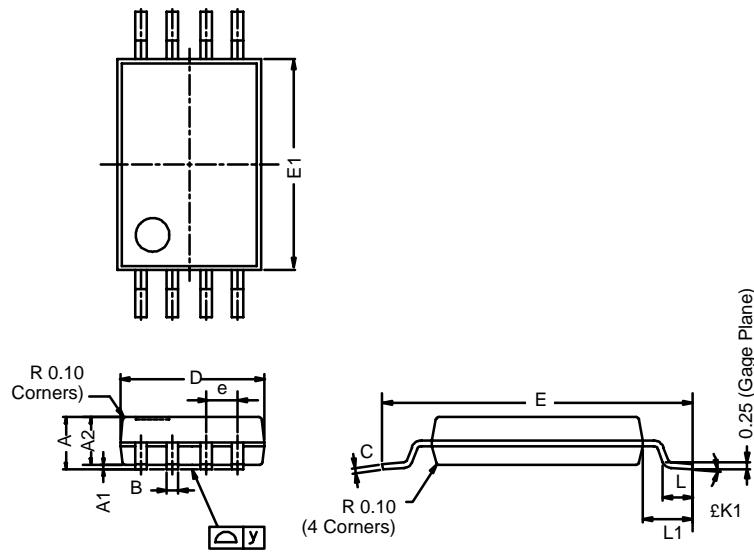
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TSSOP: 8-LEAD

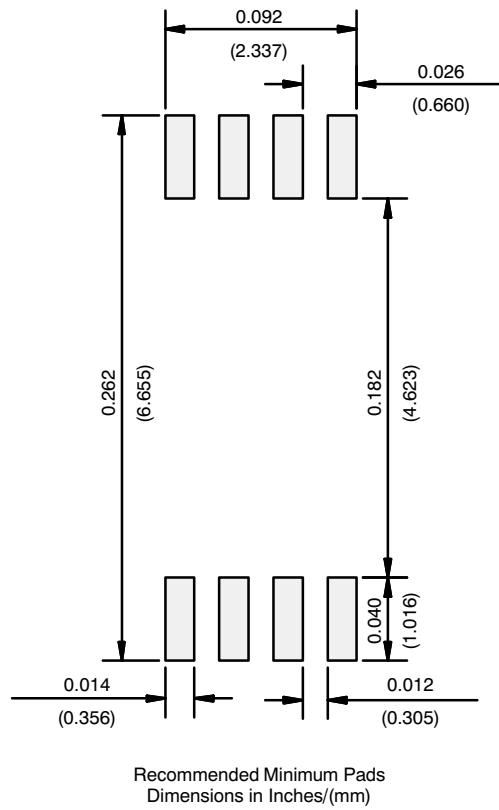
JEDEC Part Number: MO-153



Dim	MILLIMETERS		
	Min	Nom	Max
A	—	—	1.20
A₁	0.05	0.10	0.15
A₂	0.80	1.00	1.05
B	0.19	0.28	0.30
C	—	0.127	—
D	2.90	3.00	3.10
E	6.20	6.40	6.60
E₁	4.30	4.40	4.50
e	—	0.65	—
L	0.45	0.60	0.75
L₁	0.90	1.00	1.10
Y	—	—	0.10
£K1	0°	3°	6°

ECN: S-03946—Rev. G, 09-Jul-01
 DWG: 5844

RECOMMENDED MINIMUM PADS FOR TSSOP-8



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