

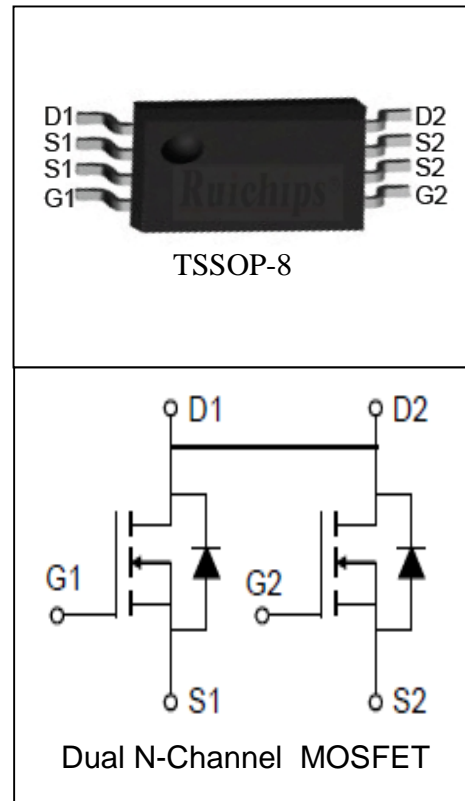
Features

- 20V/6A,
 $R_{DS(ON)} = 21m\Omega$ (Typ.) @ $V_{GS} = 4.5V$
 $R_{DS(ON)} = 30m\Omega$ (Typ.) @ $V_{GS} = 2.5V$
- Super High Dense Cell Design
- Reliable and Rugged
- Lead Free and Green Available

Applications

- Power Management

Pin Description



Absolute Maximum Ratings

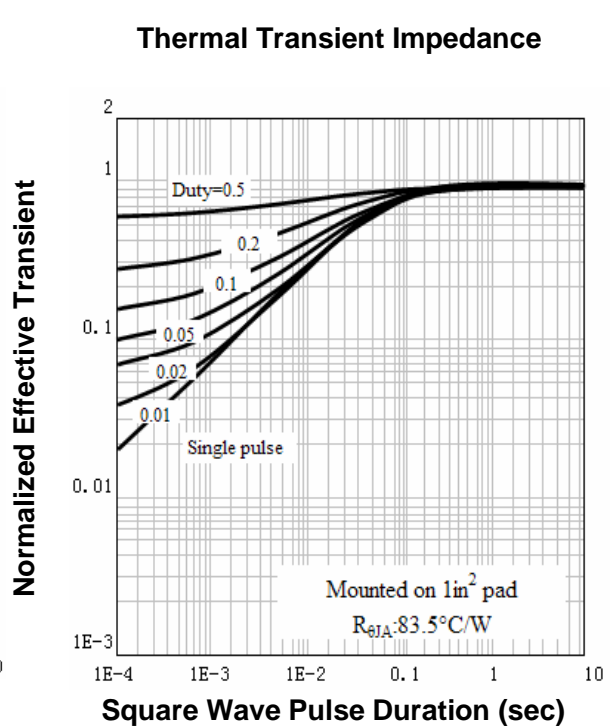
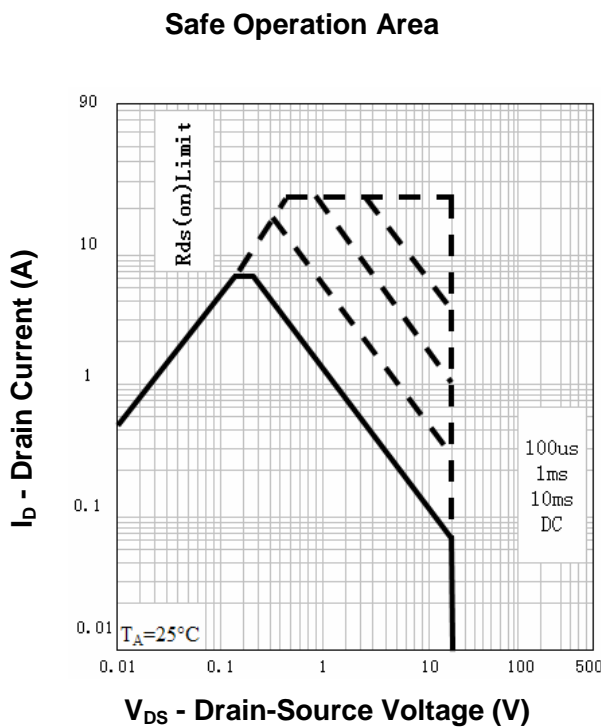
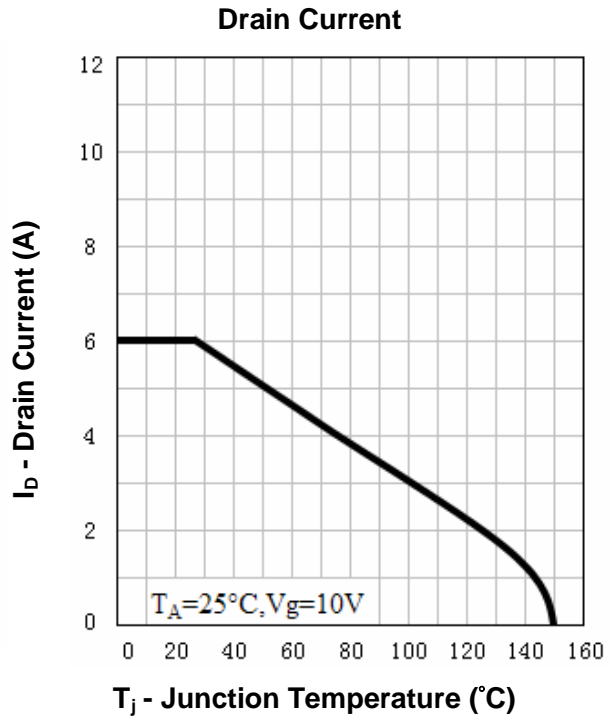
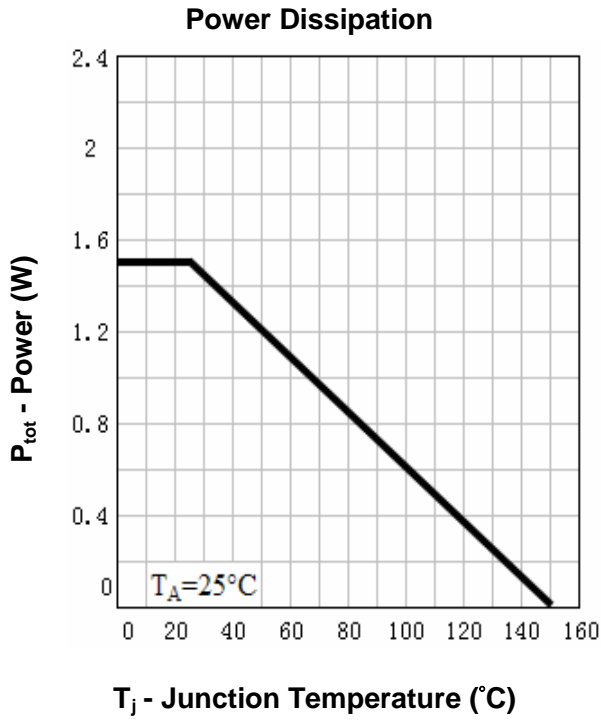
Symbol	Parameter	Rating	Unit
Common Ratings ($T_A = 25^\circ C$ Unless Otherwise Noted)			
V_{DSS}	Drain-Source Voltage	20	V
V_{GSS}	Gate-Source Voltage	± 12	
T_J	Maximum Junction Temperature	150	$^\circ C$
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ C$
I_S	Diode Continuous Forward Current	$T_A = 25^\circ C$ 1.7	A
Mounted on Large Heat Sink			
I_{DP}	300 μs Pulse Drain Current Tested	$T_A = 25^\circ C$ 24 ^①	A
I_D	Continuous Drain Current ($V_{GS} = 4.5V$)	$T_A = 25^\circ C$ 6	A
		$T_A = 70^\circ C$ 4.5	
P_D	Maximum Power Dissipation	$T_A = 25^\circ C$ 1.5	W
		$T_A = 70^\circ C$ 0.96	
$R_{\theta JA}$ ^②	Thermal Resistance-Junction to Ambient	83.5	$^\circ C/W$

Electrical Characteristics ($T_A=25^\circ\text{C}$ Unless Otherwise Noted)

Symbol	Parameter	Test Condition	RU8205G			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_{DS}=250\mu A$	20			V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=20V, V_{GS}=0V$ $T_J=85^\circ\text{C}$			1	μA
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_{DS}=250\mu A$	0.5	0.7	1.5	V
I_{GSS}	Gate Leakage Current	$V_{GS}=\pm 10V, V_{DS}=0V$			± 100	nA
$R_{DS(ON)}^{(3)}$	Drain-Source On-state Resistance	$V_{GS}=4.5V, I_{DS}=6A$		21	24	$m\Omega$
		$V_{GS}=2.5V, I_{DS}=5A$		30	40	$m\Omega$
Diode Characteristics						
$V_{SD}^{(3)}$	Diode Forward Voltage	$I_{SD}=1A, V_{GS}=0V$			1	V
Dynamic Characteristics ⁽⁴⁾						
R_G	Gate Resistance	$V_{GS}=0V, V_{DS}=0V, F=1\text{MHz}$		1.8		Ω
C_{iss}	Input Capacitance	$V_{GS}=0V,$ $V_{DS}=10V,$ Frequency=1.0MHz		580		μF
C_{oss}	Output Capacitance			120		
C_{rss}	Reverse Transfer Capacitance			95		
$t_{d(ON)}$	Turn-on Delay Time	$V_{DD}=10V, R_L=1.7\Omega,$ $I_{DS}=6A, V_{GEN}=4.5V,$ $R_G=6\Omega$		5		ns
t_r	Turn-on Rise Time			11		
$t_{d(OFF)}$	Turn-off Delay Time			38		
t_f	Turn-off Fall Time			13		
Gate Charge Characteristics ⁽⁴⁾						
Q_g	Total Gate Charge	$V_{DS}=16V, V_{GS}=4.5V,$ $I_{DS}=6A$		10	14	nC
Q_{gs}	Gate-Source Charge			1.5		
Q_{gd}	Gate-Drain Charge			3.4		

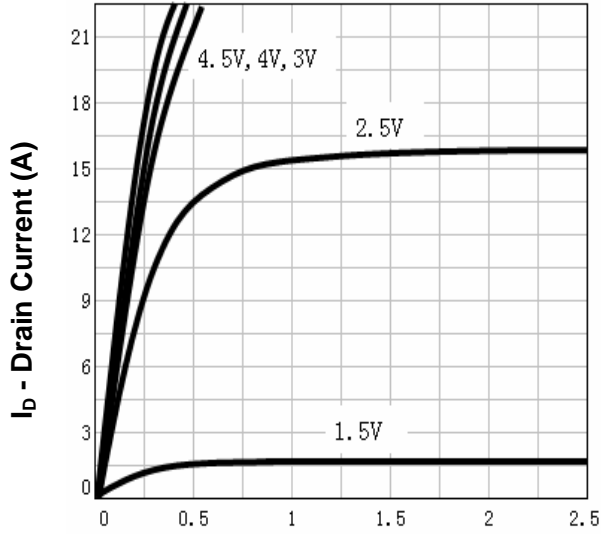
- Notes: ① Pulse width limited by safe operating area.
 ② When mounted on 1 inch square copper board, $t \leq 10\text{sec}$.
 ③ Pulse test ; Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
 ④ Guaranteed by design, not subject to production testing.

Typical Characteristics



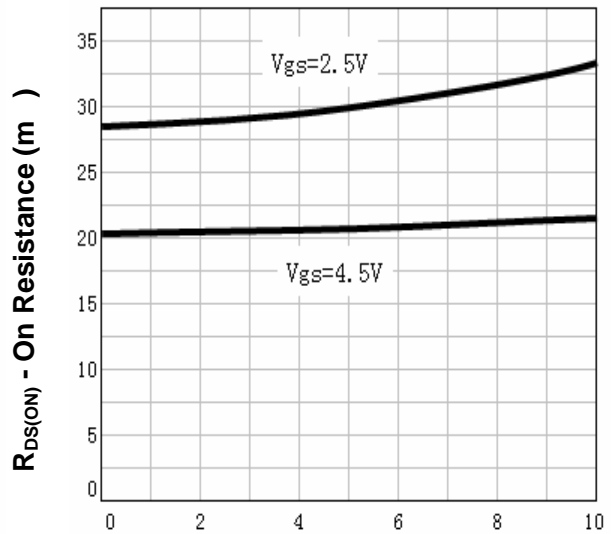
Typical Characteristics

Output Characteristics



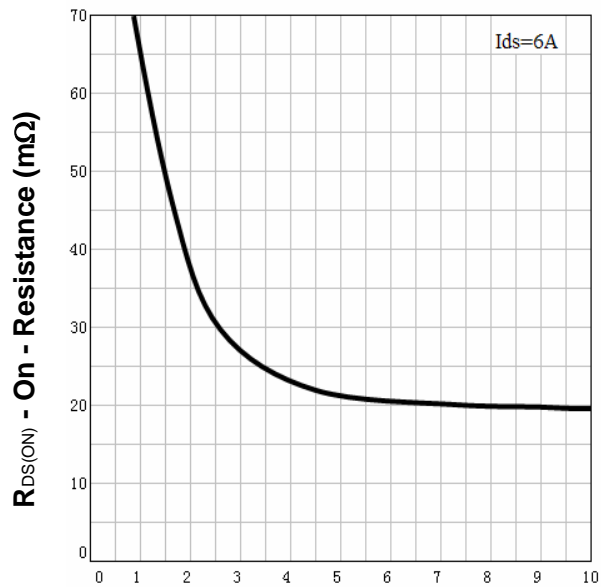
V_{DS} - Drain-Source Voltage (V)

Drain-Source On Resistance



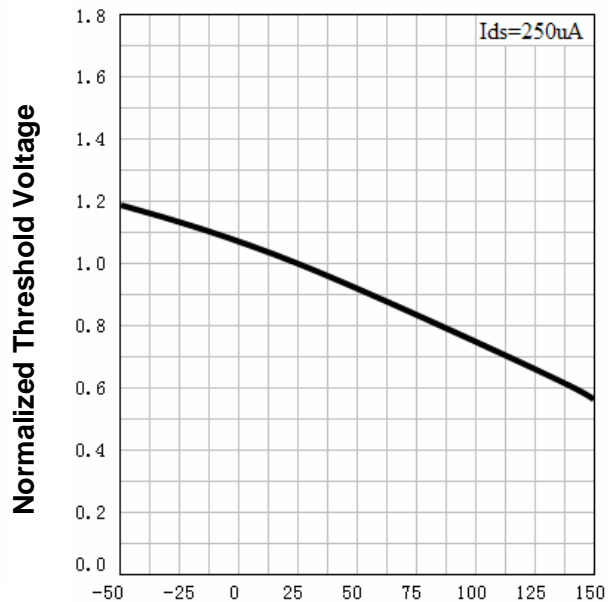
I_D - Drain Current (A)

Drain-Source On Resistance



V_{GS} - Gate-Source Voltage (V)

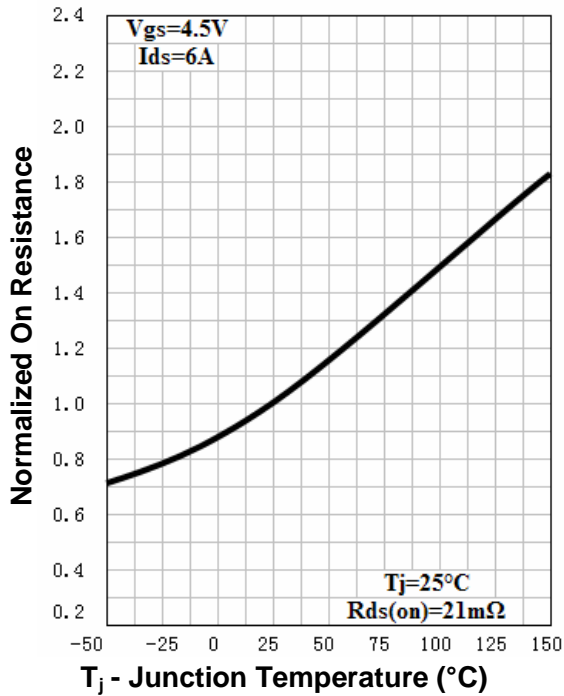
Gate Threshold Voltage



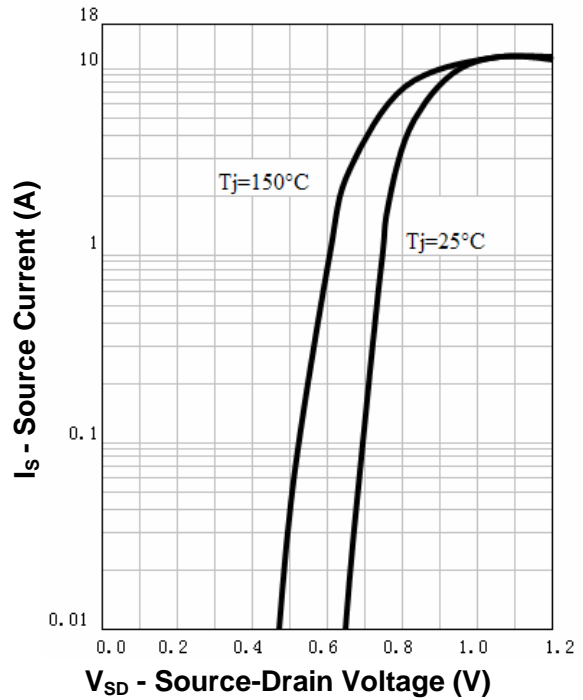
T_J - Junction Temperature (°C)

Typical Characteristics

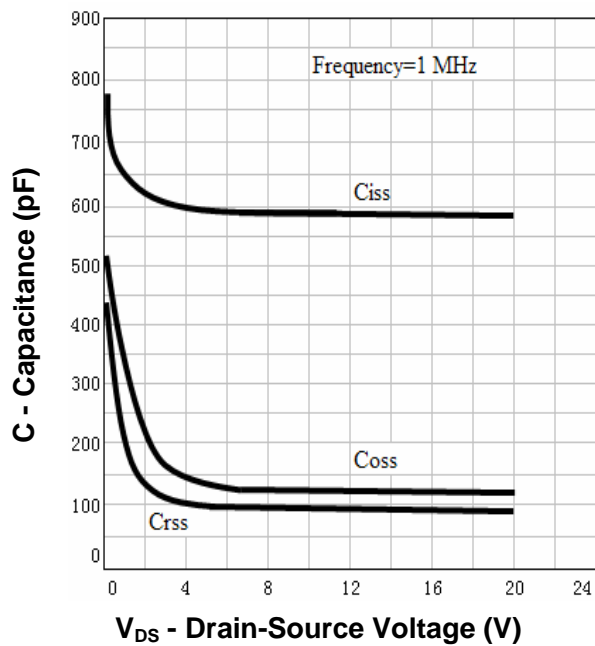
Drain-Source On Resistance



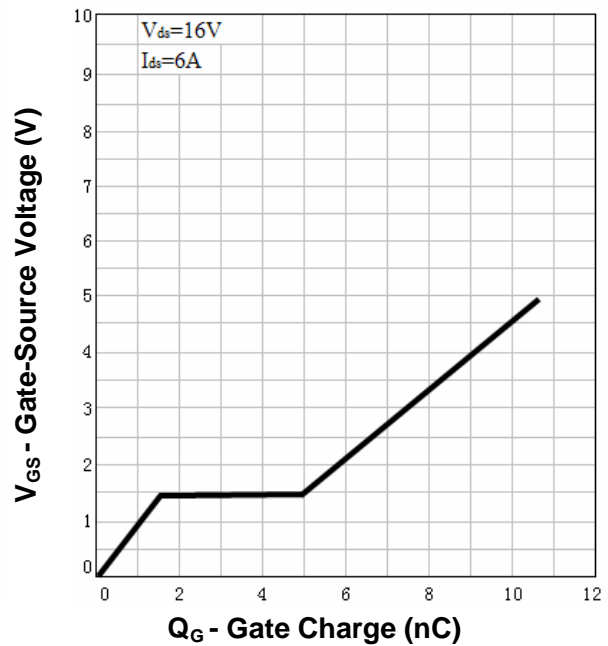
Source-Drain Diode Forward



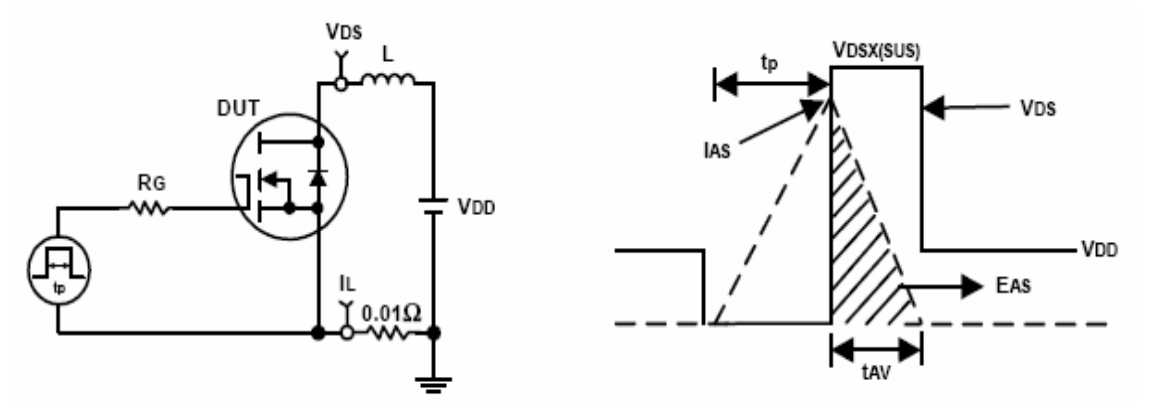
Capacitance



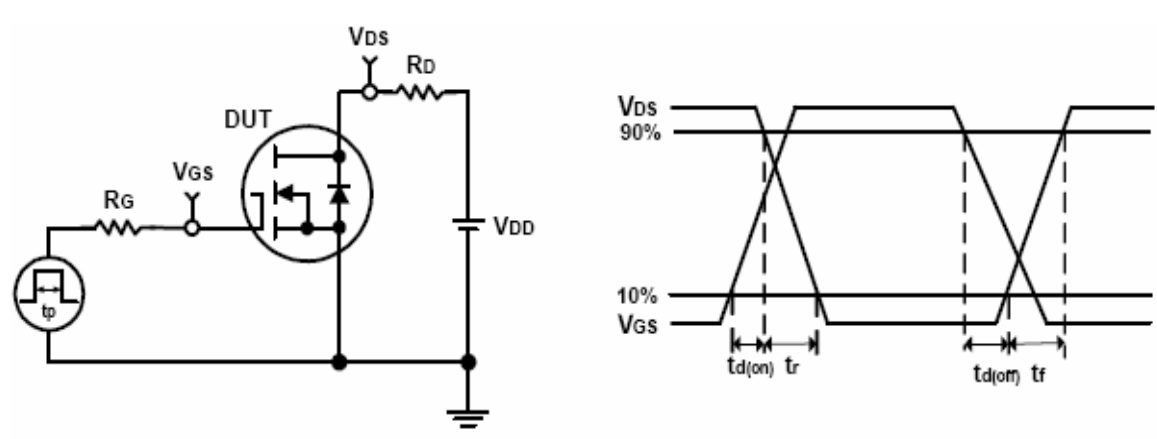
Gate Charge



Avalanche Test Circuit and Waveforms



Switching Time Test Circuit and Waveforms



Ordering and Marking Information**RU8205****Package (Available)**

G : TSSOP-8

Operating Temperature Range

C : -55 to 150 °C

Assembly Material

G : Green & Lead Free

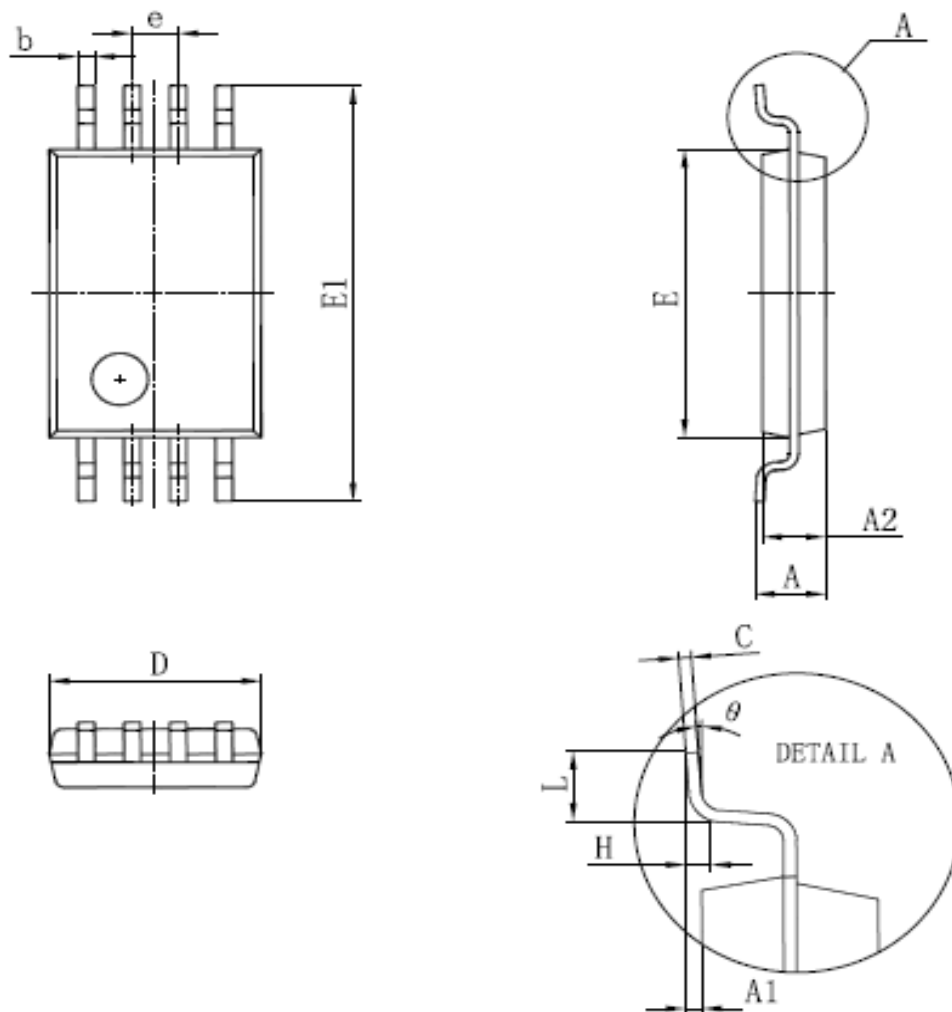
Packaging

T : TUBE

TR : Tape & Reel

Package Information

TSSOP-8



SYMBOL	MM		INCH		SYMBOL	MM		INCH	
	MIN	MAX	MIN	MAX		MIN	MAX	MIN	MAX
D	2.900	3.100	0.114	0.122	A2	0.800	1.050	0.031	0.041
E	4.300	4.500	0.169	0.177	A1	0.050	0.150	0.002	0.006
b	0.190	0.300	0.007	0.012	e	0.65 (BSC)		0.026 (BSC)	
c	0.090	0.200	0.004	0.008	L	0.500	0.700	0.020	0.028
E1	6.250	6.550	0.246	0.258	H	0.25(TYP)		0.01(TYP)	
A		1.200		0.047	θ	0°	8°	0°	8°

ALL DIMENSIONS REFER TO JEDEC STANDARD
DO NOT INCLUDE MOLD FLASH OR PROTRUSIONS

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