

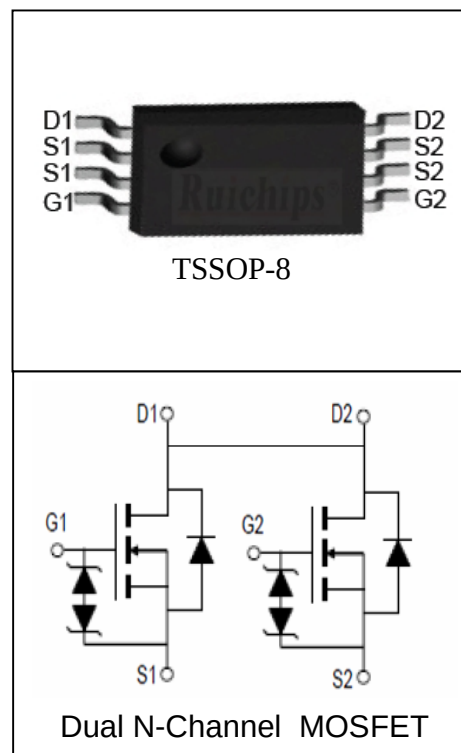
Features

- 20V/7A,
 $R_{DS(ON)} = 12m\Omega$ (Typ.) @ $V_{GS} = 4.5V$
 $R_{DS(ON)} = 18m\Omega$ (Typ.) @ $V_{GS} = 2.5V$
- Super High Dense Cell Design
- Reliable and Rugged
- ESD Protected
- Lead Free and Green Available

Applications

- PWM Applications

Pin Description



Absolute Maximum Ratings

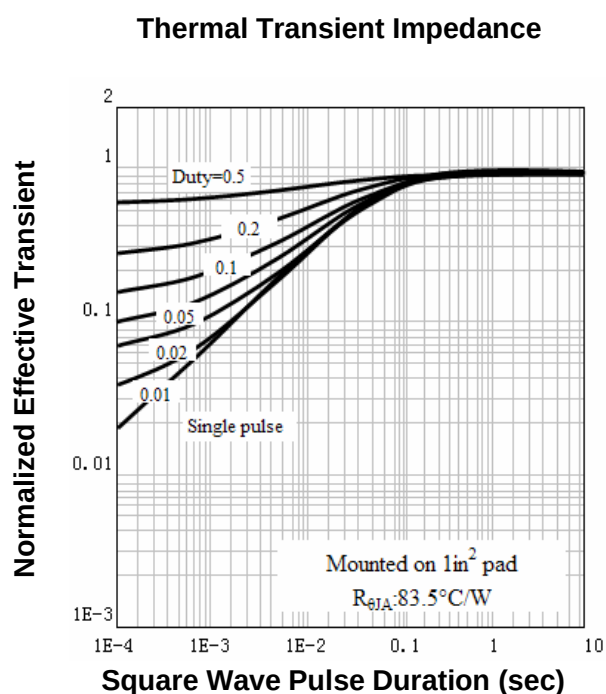
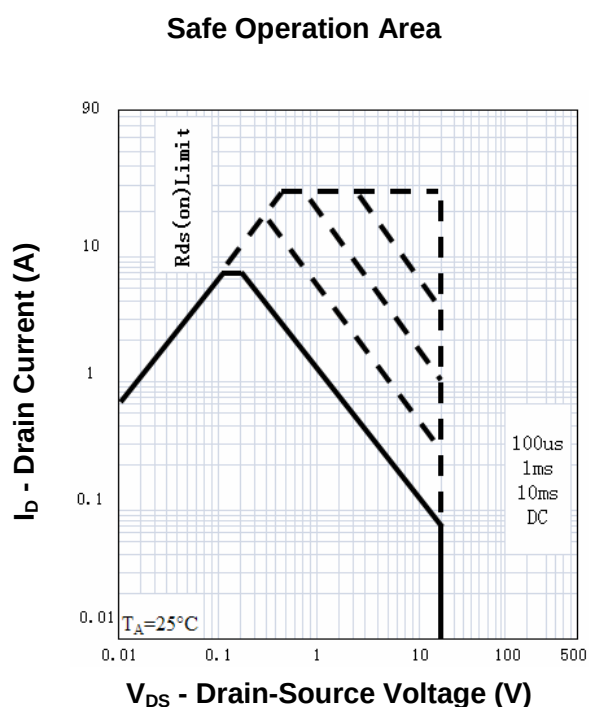
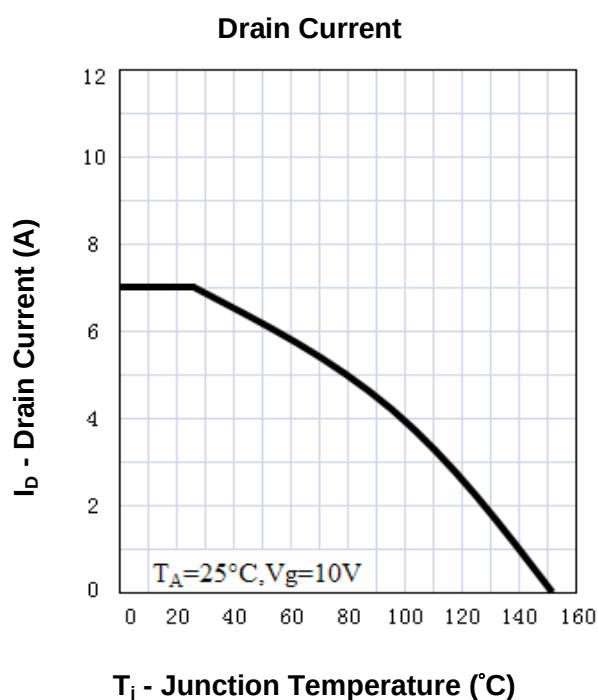
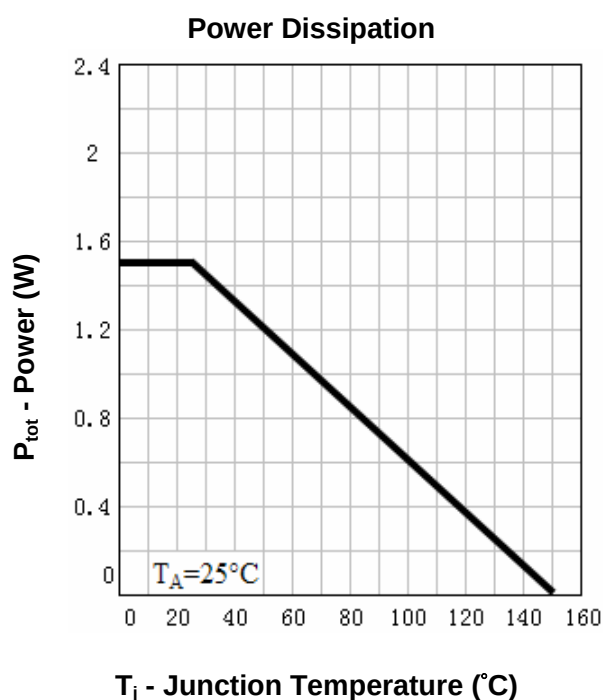
Symbol	Parameter		Rating	Unit
Common Ratings (T _A =25°C Unless Otherwise Noted)				
V _{DSS}	Drain-Source Voltage		20	V
V _{GSS}	Gate-Source Voltage		±8	
T _J	Maximum Junction Temperature		150	°C
T _{STG}	Storage Temperature Range		-55 to 150	°C
I _S	Diode Continuous Forward Current	T _A =25°C	2	A
Mounted on Large Heat Sink				
I _{DP}	300μs Pulse Drain Current Tested	T _A =25°C	28 ^①	A
I _D	Continuous Drain Current(VGS=4.5V)	T _A =25°C	7	A
		T _A =70°C	5.5	
P _D	Maximum Power Dissipation	T _A =25°C	1.5	W
		T _A =70°C	0.96	
R _{θJA} ^②	Thermal Resistance-Junction to Ambient		83.5	°C/W

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

Symbol	Parameter	Test Condition	RU20T7G			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =250μA	20			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =20V, V _{GS} =0V			1	μA
		T _J =85°C			30	
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =250μA	0.5	0.7	1.0	V
I _{GSS}	Gate Leakage Current	V _{GS} =±8V, V _{DS} =0V			±10	uA
R _{DS(ON)} ^③	Drain-Source On-state Resistance	V _{GS} =4.5V, I _{DS} =7A		12	16	mΩ
		V _{GS} =2.5V, I _{DS} =5.5A		18	25	mΩ
Diode Characteristics						
V _{SD} ^③	Diode Forward Voltage	I _{SD} =1A, V _{GS} =0V			1	V
t _{rr}	Reverse Recovery Time	I _{SD} =1A, dI _{SD} /dt=100A/μs		18		ns
Q _{rr}	Reverse Recovery Charge			8		nC
Dynamic Characteristics ^④						
R _G	Gate Resistance	V _{GS} =0V,V _{DS} =0V,F=1MHz		1.5		Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =10V, Frequency=1.0MHz		1155		pF
C _{oss}	Output Capacitance			180		
C _{rss}	Reverse Transfer Capacitance			140		
t _{d(ON)}	Turn-on Delay Time	V _{DD} =10V, R _L =1.4Ω, I _{DS} =7A, V _{GEN} =4.5V, R _G =3Ω		6		ns
t _r	Turn-on Rise Time			12		
t _{d(OFF)}	Turn-off Delay Time			50		
t _f	Turn-off Fall Time			14		
Gate Charge Characteristics ^④						
Q _g	Total Gate Charge	V _{DS} =16V, V _{GS} =4.5V, I _{DS} =7A		13		nC
Q _{gs}	Gate-Source Charge			1		
Q _{gd}	Gate-Drain Charge			3.5		

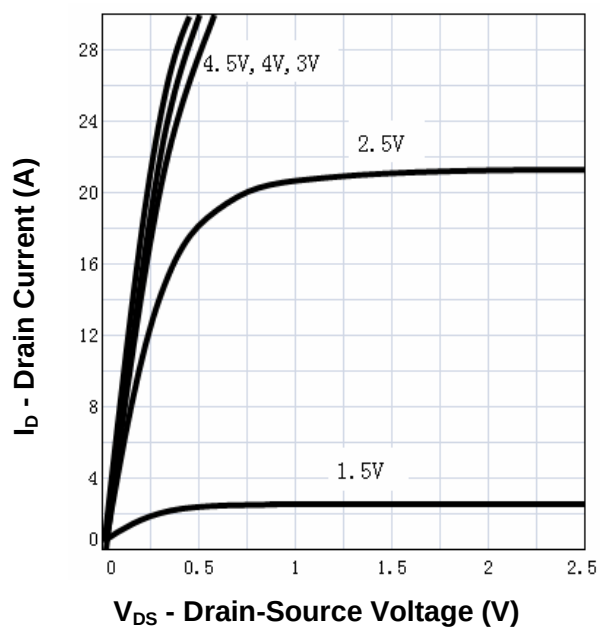
- Notes: ① Pulse width limited by safe operating area.
 ② When mounted on 1 inch square copper board, $t \leq 10\text{sec}$.
 ③ Pulse test ; Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
 ④ Guaranteed by design, not subject to production testing.

Typical Characteristics

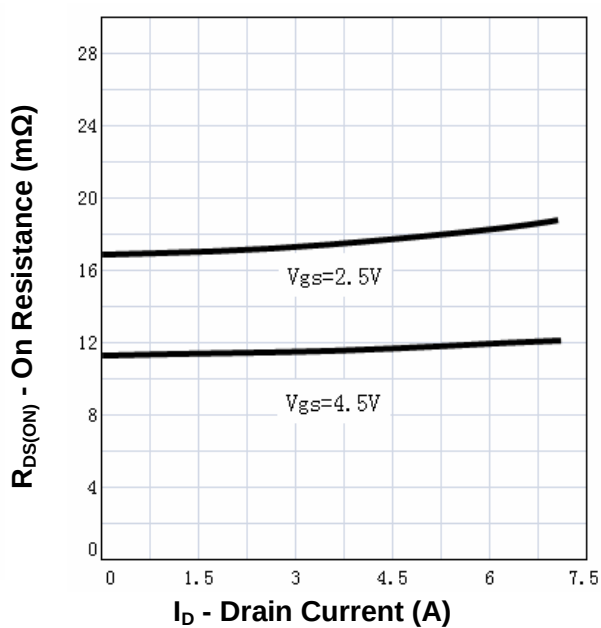


Typical Characteristics

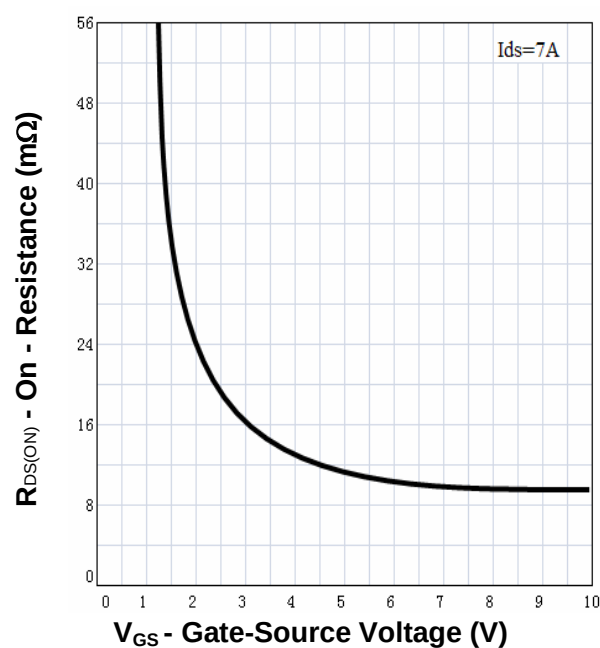
Output Characteristics



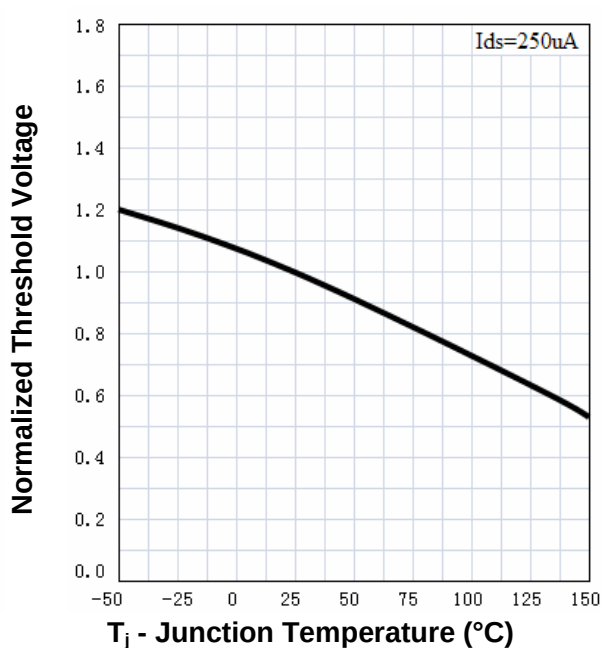
Drain-Source On Resistance



Drain-Source On Resistance

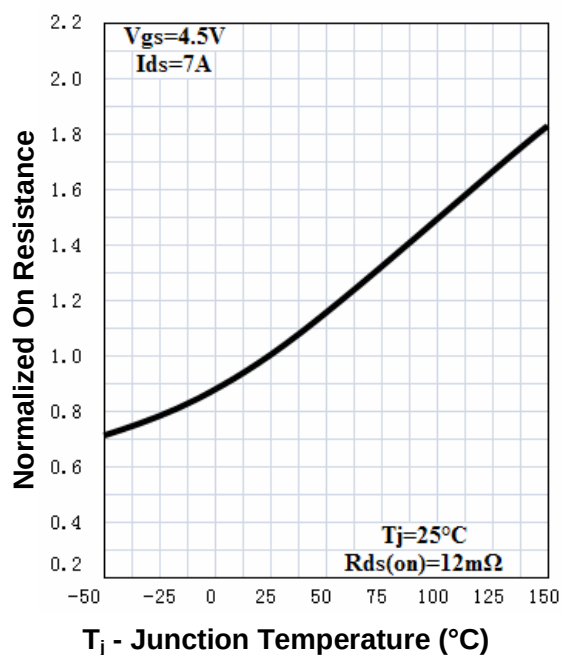


Gate Threshold Voltage

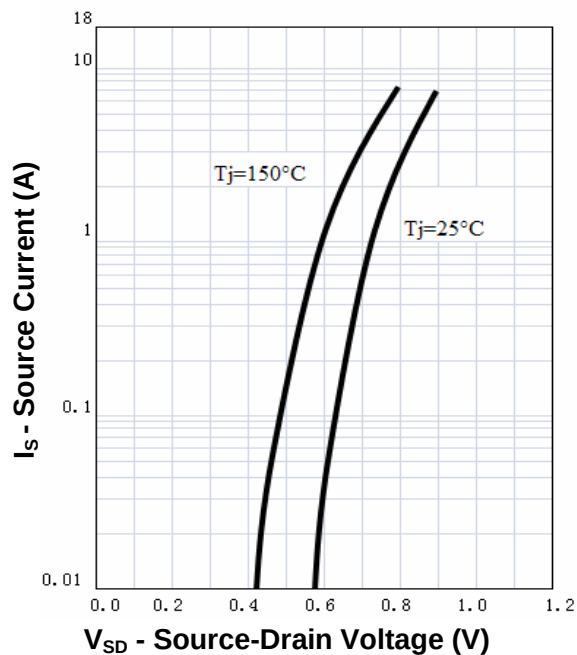


Typical Characteristics

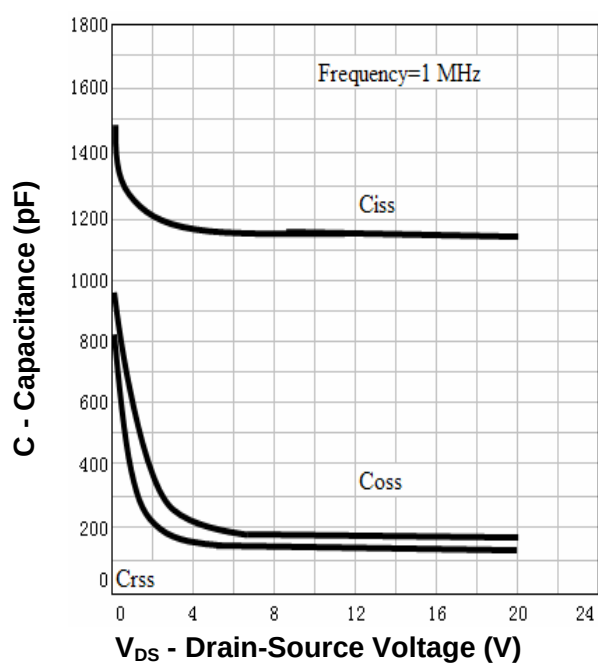
Drain-Source On Resistance



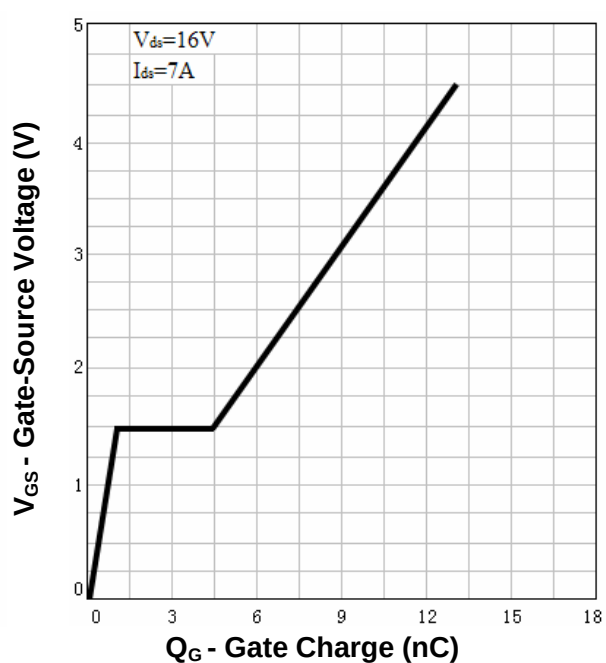
Source-Drain Diode Forward



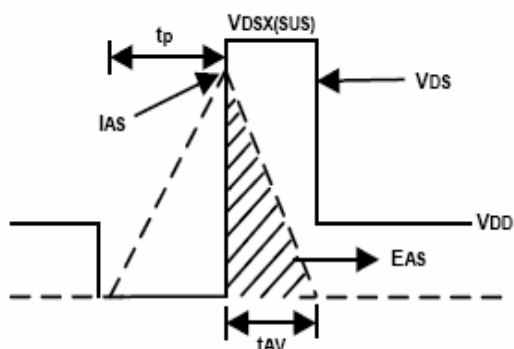
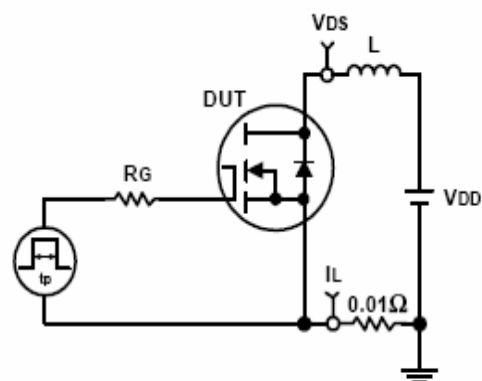
Capacitance



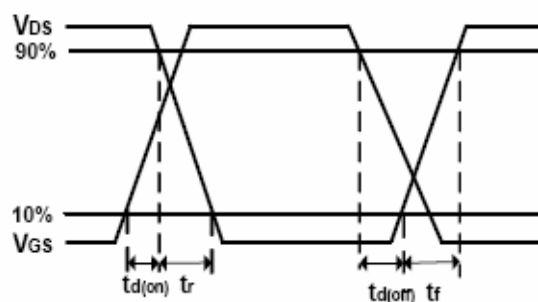
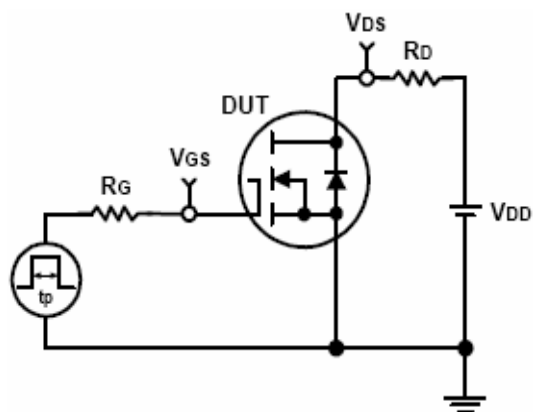
Gate Charge



Avalanche Test Circuit and Waveforms



Switching Time Test Circuit and Waveforms

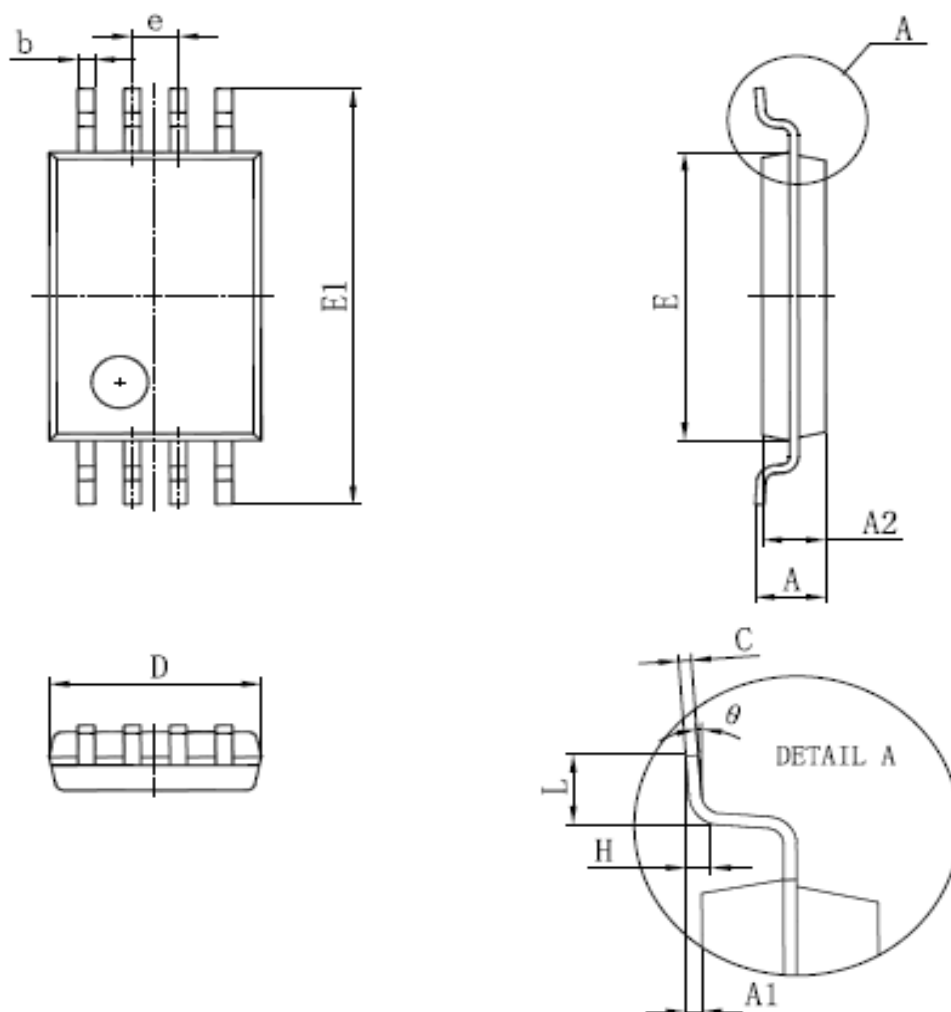


Ordering and Marking Information

Device	Marking	Package	Packaging	Quantity	Reel Size	Tape width
RU20T7G	RU20T7G	TSSOP8	Tape&Reel	3000	13''	12mm

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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