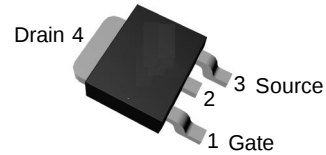
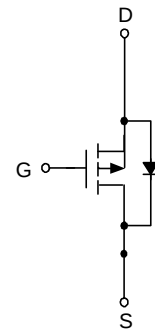


**P-Channel Enhancement Mode MOSFET****Features**

- -60V/-15A,
 $R_{DS(ON)} = 93m\Omega(max.) @ V_{GS} = -10V$
 $R_{DS(ON)} = 128m\Omega(max.) @ V_{GS} = -4.5V$
- Reliable and Rugged
- Lead Free and Green Devices Available
(RoHS Compliant)
- 100% UIS + R_g Tested

Pin Description

Top View of TO-252-3



P-Channel MOSFET

Applications

- Power Management in Notebook Computer, Portable Equipment and Battery Powered Systems.

**Absolute Maximum Ratings** ($T_A = 25^\circ\text{C}$ Unless Otherwise Noted)

Symbol	Parameter		Rating	Unit
Common Ratings (T _A =25°C Unless Otherwise Noted)				
V _{DSS}	Drain-Source Voltage		-60	V
V _{GSS}	Gate-Source Voltage		±25	
T _J	Maximum Junction Temperature		150	°C
T _{STG}	Storage Temperature Range		-55 to 150	
I _S	Diode Continuous Forward Current	T _C =25°C	-10	A
I _D	Continuous Drain Current	T _C =25°C	-15	
		T _C =100°C	-9.5	
I _{DM}	Pulsed Drain Current	T _C =25°C	-62*	
P _D	Maximum Power Dissipation	T _C =25°C	44.6	W
		T _C =100°C	17.9	
R _{θJC}	Thermal Resistance-Junction to Case	Steady State	2.8	°C/W
I _D	Continuous Drain Current	T _A =25°C	-5.8	A
		T _A =70°C	-4.6	
P _D	Maximum Power Dissipation	T _A =25°C	6.25	W
		T _A =70°C	4	
R _{θJA}	Thermal Resistance-Junction to Ambient	t ≤ 10s	20	°C/W
		Steady State	55	
I _{AS} ^a	Avalanche Current, Single pulse (L=0.1mH)		19	A
E _{AS} ^a	Avalanche Energy, Single pulse (L=0.1mH)		18	mJ

Note * : Current limited by bond wire.

Note a : UIS tested and pulse width are limited by maximum junction temperature 150°C (initial temperature $T_J = 25^\circ\text{C}$).

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

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =-250μA	-60	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-48V, V _{GS} =0V	-	-	-1	μA
		T _J =85°C	-	-	-30	
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =-250μA	-1	-2	-3	V
I _{GSS}	Gate Leakage Current	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
R _{DS(ON)} ^b	Drain-Source On-state Resistance	V _{GS} =-10V, I _{DS} =-5.8A	-	73	93	mΩ
		V _{GS} =-4.5V, I _{DS} =-3.5A	-	93	128	
Diode Characteristics						
V _{SD} ^b	Diode Forward Voltage	I _{SD} =-1A, V _{GS} =0V	-	-0.7	-1	V
t _{rr} ^c	Reverse Recovery Time	I _{SD} =-5.8A, dI _{SD} /dt=100A/μs	-	22	-	ns
Q _{rr} ^c	Reverse Recovery Charge		-	23	-	nC
Dynamic Characteristics ^c						
R _G	Gate Resistance	V _{GS} =0V,V _{DS} =0V,F=1MHz	-	10	20	Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =-30V, Frequency=1.0MHz	-	530	-	pF
C _{oss}	Output Capacitance		-	66	-	
C _{rss}	Reverse Transfer Capacitance		-	36	-	
t _{d(ON)}	Turn-on Delay Time	V _{DD} =-30V, R _L =30Ω, I _{DS} =-1A, V _{GEN} =-10V, R _G =6Ω	-	9	-	ns
t _r	Turn-on Rise Time		-	6	-	
t _{d(OFF)}	Turn-off Delay Time		-	36	-	
t _f	Turn-off Fall Time		-	25	-	
Gate Charge Characteristics ^c						
Q _g	Total Gate Charge	V _{DS} =-30V, V _{GS} =-10V, I _{DS} =-5.8A	-	12	-	nC
Q _{gs}	Gate-Source Charge		-	1.5	-	
Q _{gd}	Gate-Drain Charge		-	3.3	-	

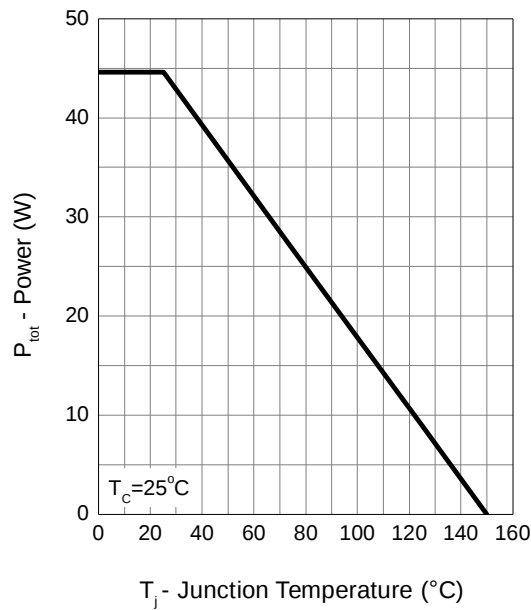
Note b : Pulse test ; pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.

Note c : Guaranteed by design, not subject to production testing.

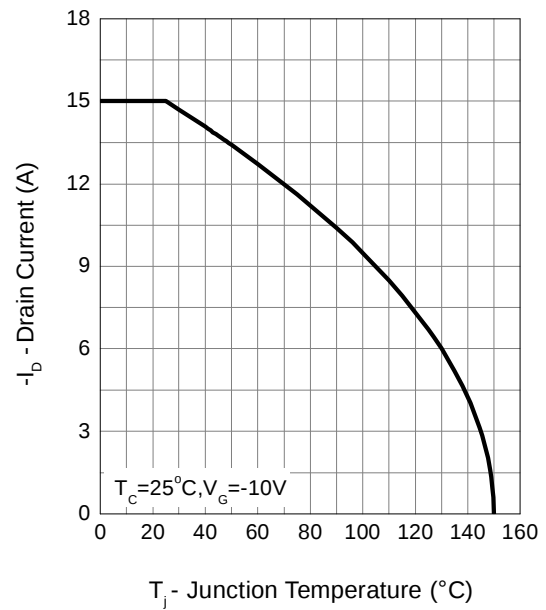


Typical Operating Characteristics

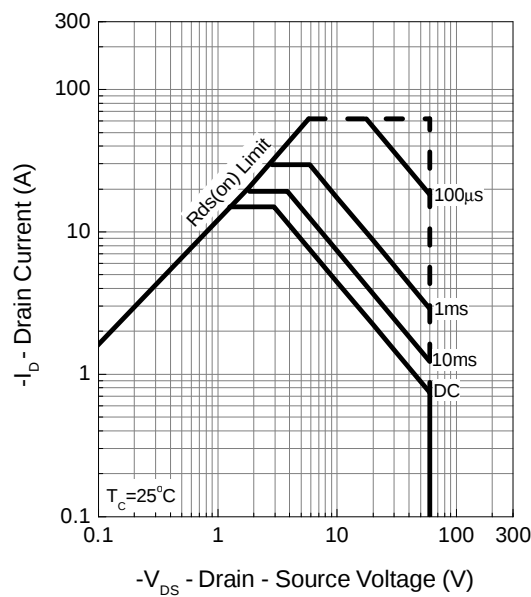
Power Dissipation



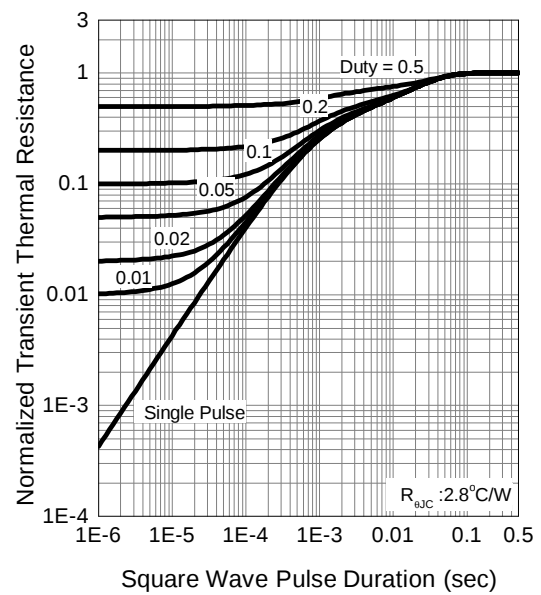
Drain Current



Safe Operation Area



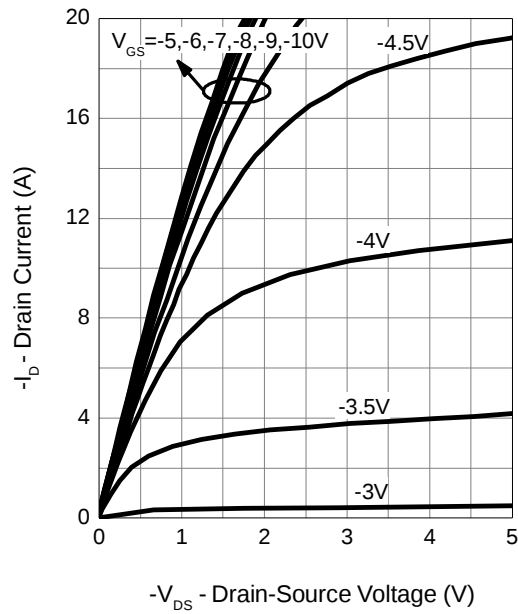
Thermal Transient Impedance



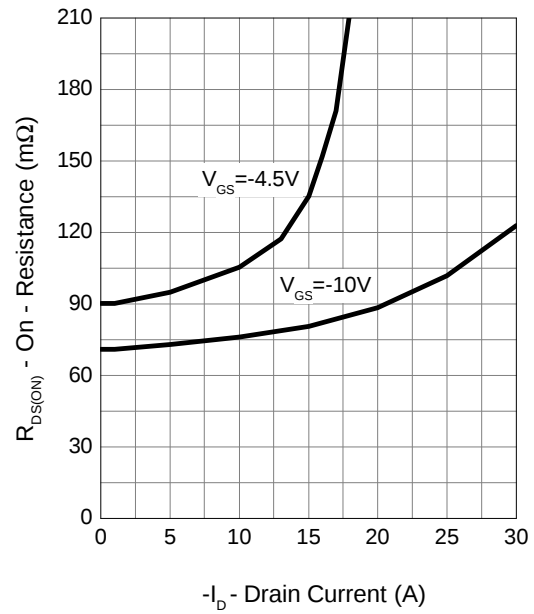


Typical Operating Characteristics (Cont.)

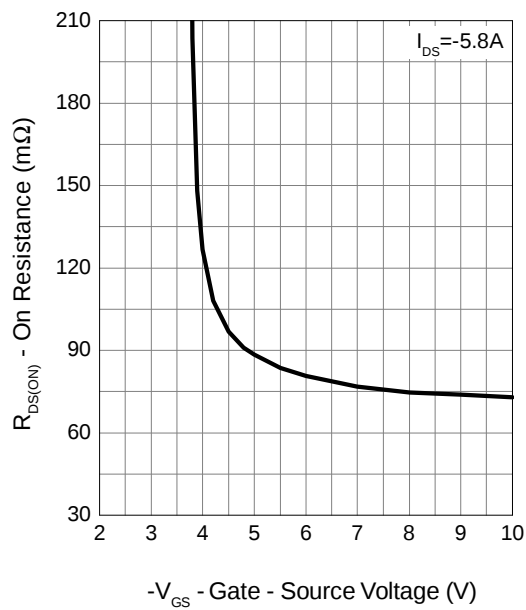
Output Characteristics



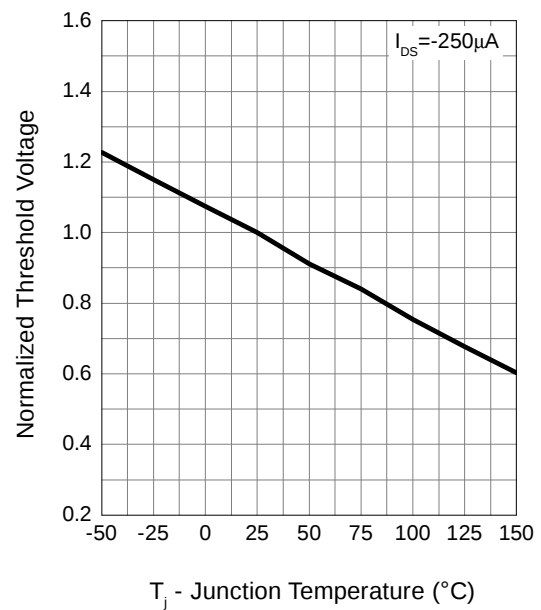
Drain-Source On Resistance



Gate-Source On Resistance



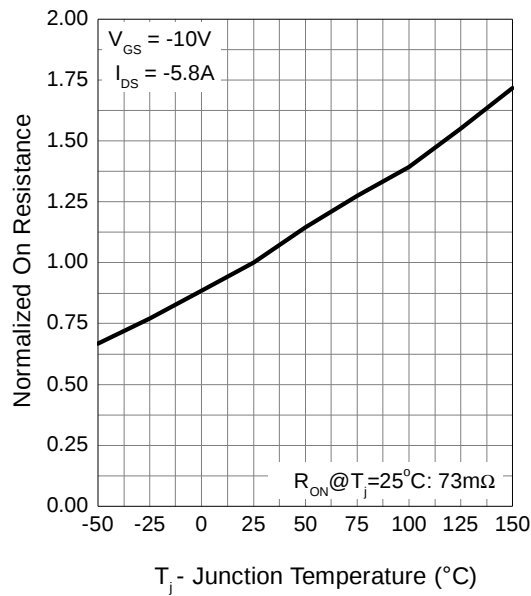
Gate Threshold Voltage



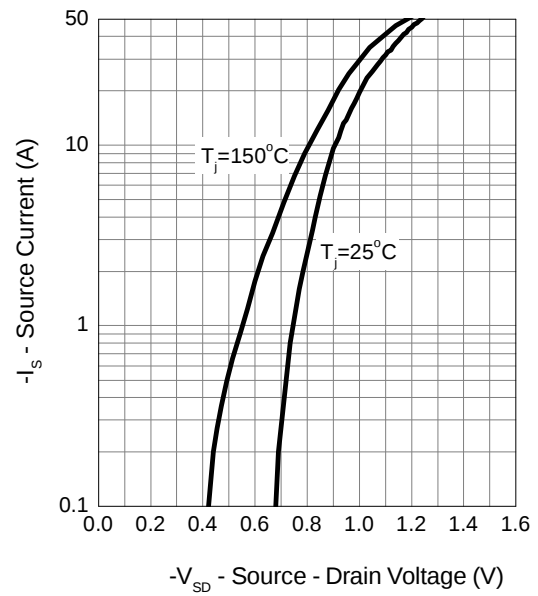


Typical Operating Characteristics (Cont.)

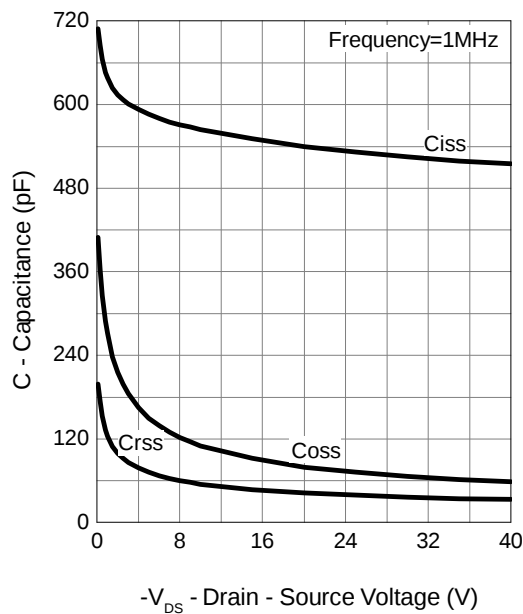
Drain-Source On Resistance



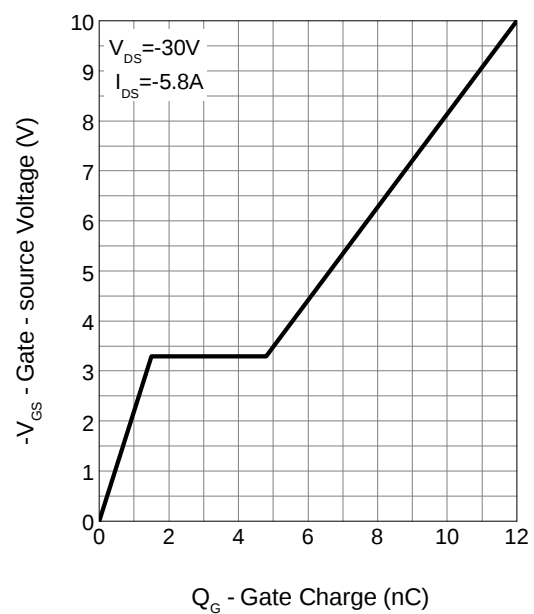
Source-Drain Diode Forward



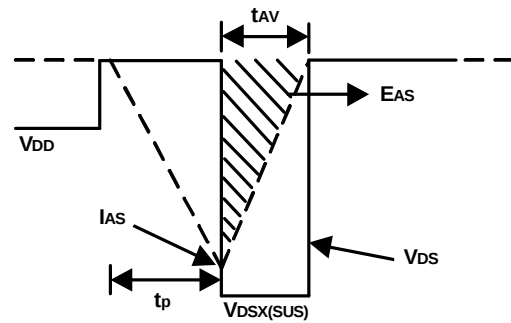
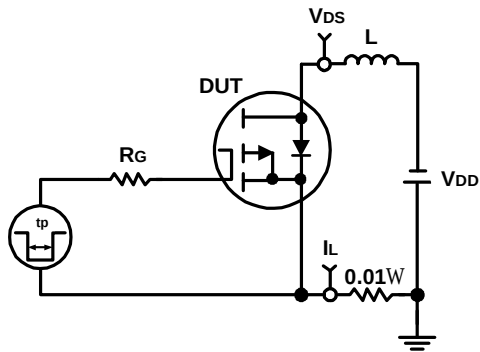
Capacitance



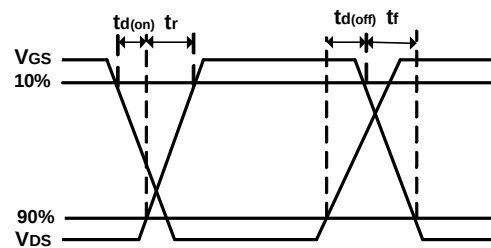
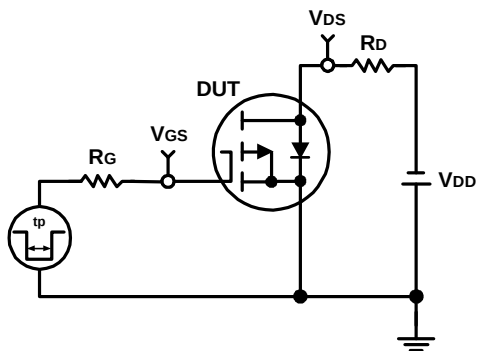
Gate Charge



Avalanche Test Circuit and Waveforms



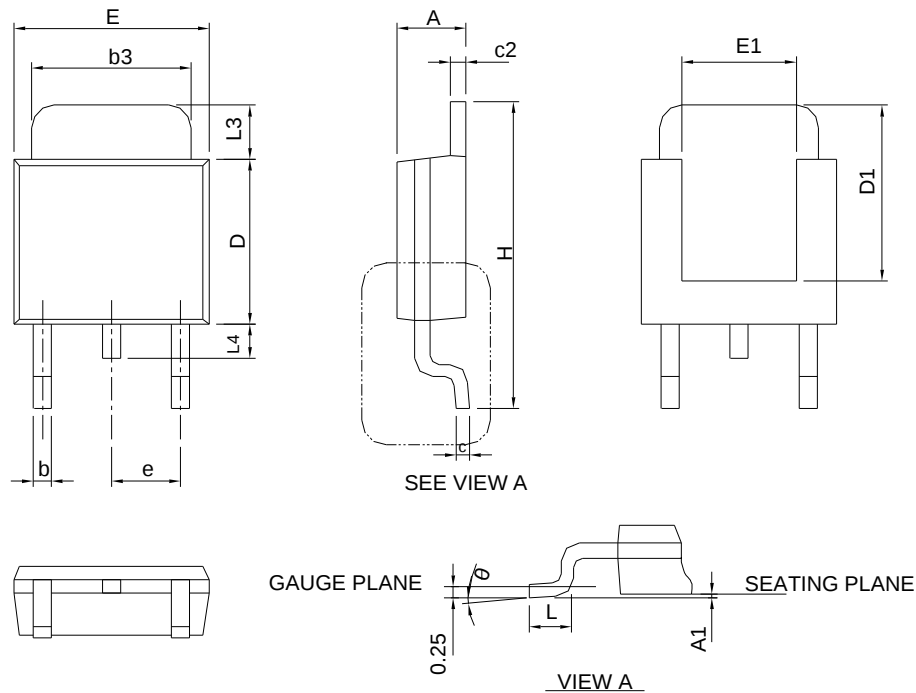
Switching Time Test Circuit and Waveforms





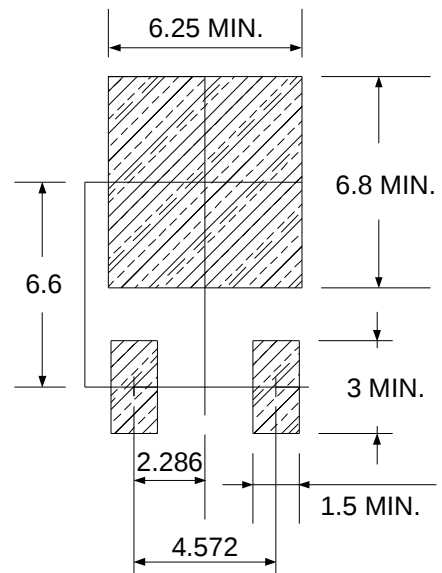
Package Information

TO-252-3



SYMBOL	TO-252-3			
	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A	2.18	2.39	0.086	0.094
A1	-	0.13	-	0.005
b	0.50	0.89	0.020	0.035
b3	4.95	5.46	0.195	0.215
c	0.46	0.61	0.018	0.024
c2	0.46	0.89	0.018	0.035
D	5.33	6.22	0.210	0.245
D1	4.57	6.00	0.180	0.236
E	6.35	6.73	0.250	0.265
E1	3.81	6.00	0.150	0.236
e	2.29 BSC		0.090 BSC	
H	9.40	10.41	0.370	0.410
L	0.90	1.78	0.035	0.070
L3	0.89	2.03	0.035	0.080
L4	-	1.02	-	0.040
θ	0°	8°	0°	8°

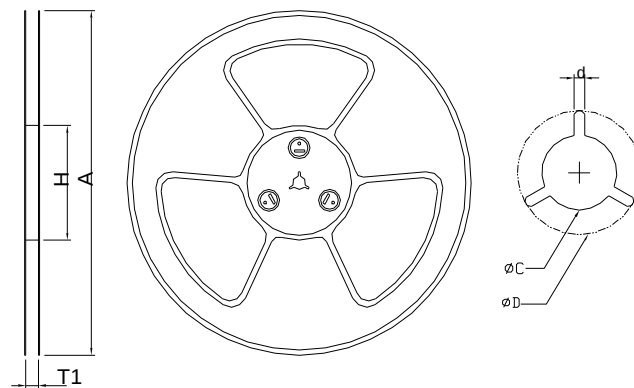
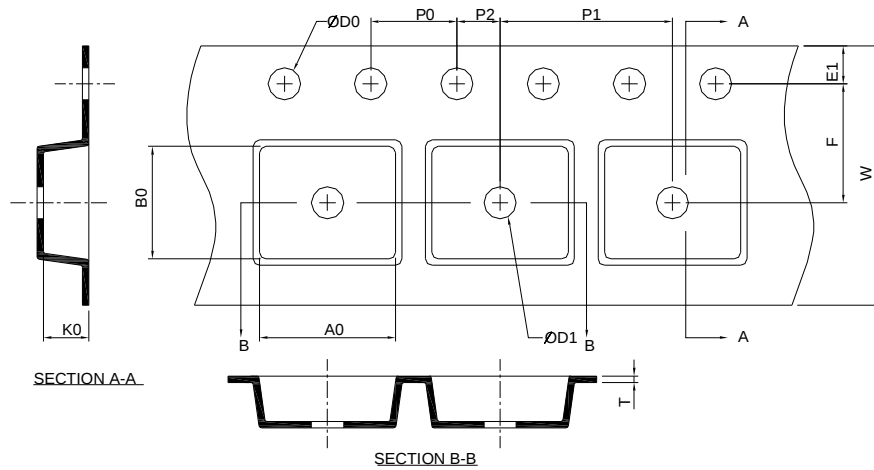
RECOMMENDED LAND PATTERN



UNIT: mm

Note : Follow JEDEC TO-252 .

Carrier Tape & Reel Dimensions

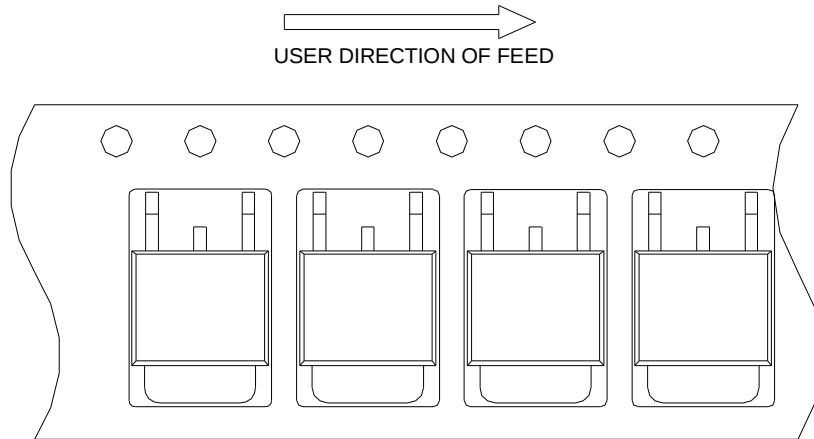


Application	A	H	T1	C	d	D	W	E1	F
TO-252-3	330.0 $\pm$ 2.00	50 MIN.	16.4 $\pm$ 2.00 -0.00	13.0 $\pm$ 0.50 -0.20	1.5 MIN.	20.2 MIN.	16.0 $\pm$ 0.30	1.75 $\pm$ 0.10	7.50 $\pm$ 0.05
	P0	P1	P2	D0	D1	T	A0	B0	K0
	4.0 $\pm$ 0.10	8.0 $\pm$ 0.10	2.0 $\pm$ 0.05	1.5 $\pm$ 0.10 -0.00	1.5 MIN.	0.6 $\pm$ 0.00 -0.40	6.80 $\pm$ 0.20	10.40 $\pm$ 0.20	2.50 $\pm$ 0.20

(mm)

Taping Direction Information

TO-252-3



Classification Profile

