



STU/D30L01A

SamHop Microelectronics Corp.

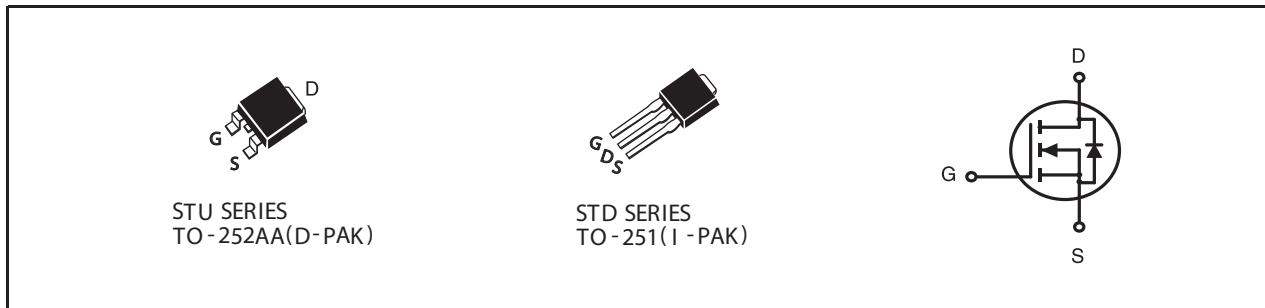
Ver 1.0

N-Channel Logic Level Enhancement Mode Field Effect Transistor

PRODUCT SUMMARY		
VDSS	ID	RDS(ON) (mΩ) Typ
100V	30A	30 @ VGS=10V

FEATURES

- Super high dense cell design for low RDS(ON).
- Rugged and reliable.
- TO-252 and TO-251 Package.



ABSOLUTE MAXIMUM RATINGS ($T_A=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Limit	Units
V_{DS}	Drain-Source Voltage	100	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Drain Current-Continuous ^a	30	A
	$T_C=25^\circ\text{C}$	30	A
	$T_C=70^\circ\text{C}$	24	A
I_{DM}	-Pulsed ^b	88	A
E_{AS}	Single Pulse Avalanche Energy ^d	156	mJ
P_D	Maximum Power Dissipation ^a	50	W
	$T_C=25^\circ\text{C}$	50	W
	$T_C=70^\circ\text{C}$	32	W
T_J, T_{STG}	Operating Junction and Storage Temperature Range	-55 to 150	$^\circ\text{C}$

THERMAL CHARACTERISTICS

$R_{\theta JC}$	Thermal Resistance, Junction-to-Case ^a	2.5	$^\circ\text{C}/\text{W}$
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient ^a	50	$^\circ\text{C}/\text{W}$

Details are subject to change without notice.

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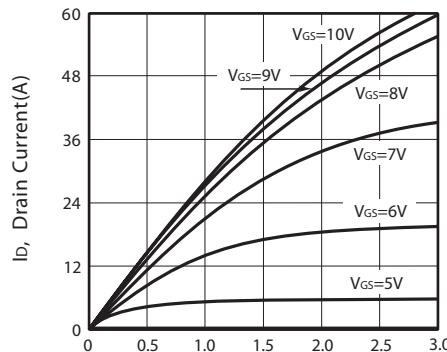
ELECTRICAL CHARACTERISTICS ($T_A=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
OFF CHARACTERISTICS						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V , I _D =250uA	100			V
BV _{DSS}	Drain-Source Breakdown Voltage ^e	V _{GS} =0V , I _D =10mA	110			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =80V , V _{GS} =0V			1	uA
I _{GSS}	Gate-Body Leakage Current	V _{GS} = ±20V , V _{DS} =0V			±100	nA
ON CHARACTERISTICS						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250uA	2	3	4	V
R _{D(S)} (ON)	Drain-Source On-State Resistance	V _{GS} =10V , I _D =15A		30	37	m ohm
g _{Fs}	Forward Transconductance	V _{DS} =10V , I _D =15A		16		S
DYNAMIC CHARACTERISTICS ^c						
C _{iss}	Input Capacitance	V _{DS} =25V,V _{GS} =0V f=1.0MHz		2160		pF
C _{oss}	Output Capacitance			166		pF
C _{rss}	Reverse Transfer Capacitance			105		pF
SWITCHING CHARACTERISTICS ^c						
t _{D(ON)}	Turn-On Delay Time	V _{DD} =50V I _D =1A V _{GS} =10V R _{GEN} = 6 ohm		53		ns
t _r	Rise Time			50		ns
t _{D(OFF)}	Turn-Off Delay Time			53		ns
t _f	Fall Time			12		ns
Q _g	Total Gate Charge	V _{DS} =50V,I _D =15A,V _{GS} =10V		30		nC
Q _{gs}	Gate-Source Charge	V _{DS} =50V,I _D =15A, V _{GS} =10V		6.5		nC
Q _{gd}	Gate-Drain Charge			12		nC
DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS						
V _{SD}	Diode Forward Voltage	V _{GS} =0V,I _s =3A		0.77	1.3	V
Notes						
a.Surface Mounted on FR4 Board,t ≤ 10sec.						
b.Pulse Test:Pulse Width ≤ 300us, Duty Cycle ≤ 2%.						
c.Guaranteed by design, not subject to production testing.						
d.Starting T _J =25°C,L=0.5mH,V _{DD} = 50V.(See Figure13)						
e.Pulse Test:Pulse Width < 1us, Duty Cycle < 1%.						

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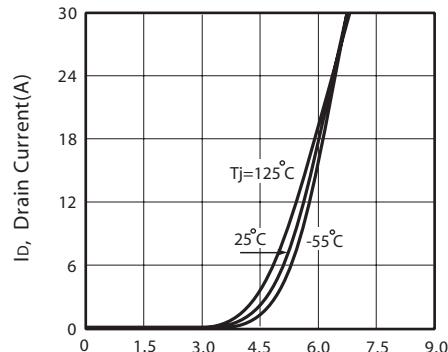
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V_{ds}, Drain-to-Source Voltage(V)

Figure 1. Output Characteristics



V_{gs}, Gate-to-Source Voltage(V)

Figure 2. Transfer Characteristics

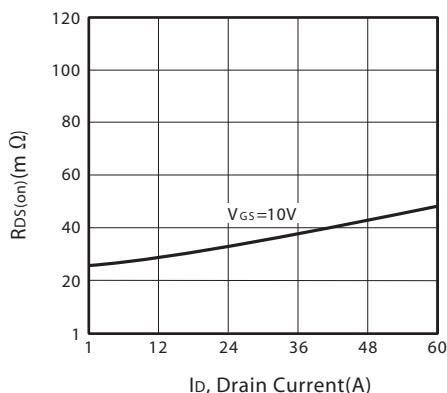


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

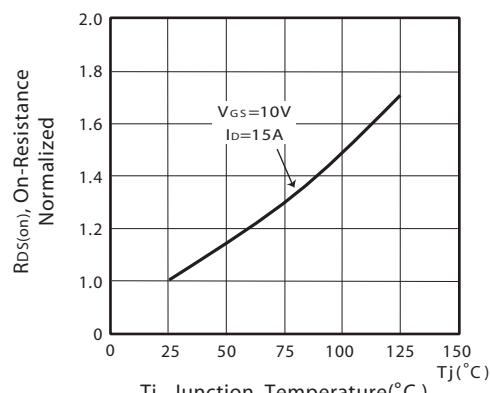


Figure 4. On-Resistance Variation with Drain Current and Temperature

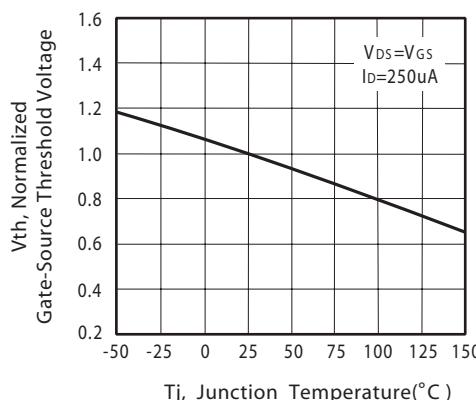


Figure 5. Gate Threshold Variation with Temperature

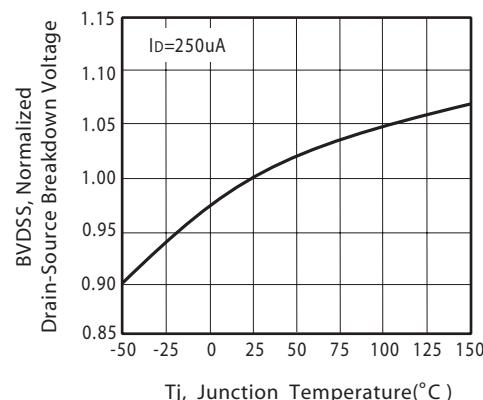
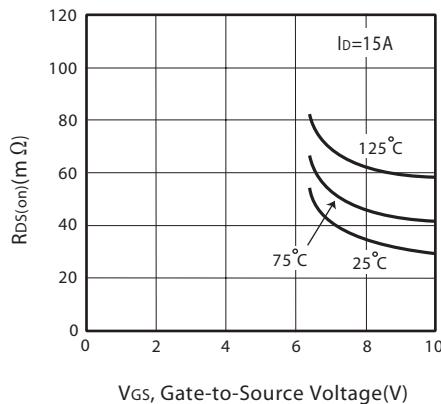


Figure 6. Breakdown Voltage Variation with Temperature

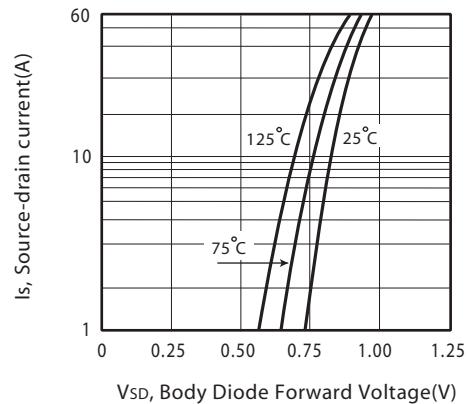
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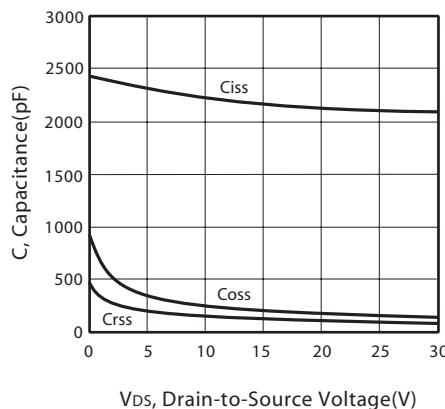
V_{GS}, Gate-to-Source Voltage(V)

Figure 7. On-Resistance vs. Gate-Source Voltage



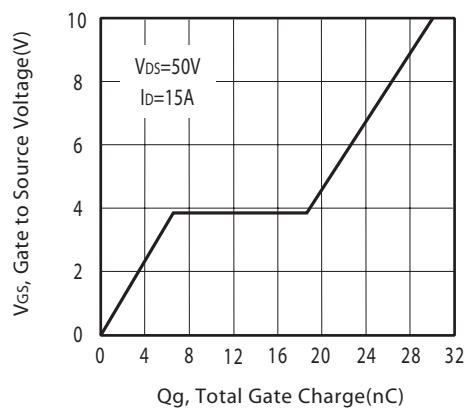
V_{SD}, Body Diode Forward Voltage(V)

Figure 8. Body Diode Forward Voltage Variation with Source Current



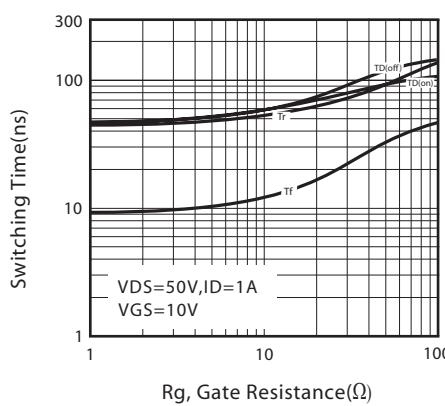
V_{DS}, Drain-to-Source Voltage(V)

Figure 9. Capacitance



Q_G, Total Gate Charge(nC)

Figure 10. Gate Charge



R_g, Gate Resistance(Ω)

Figure 11. switching characteristics

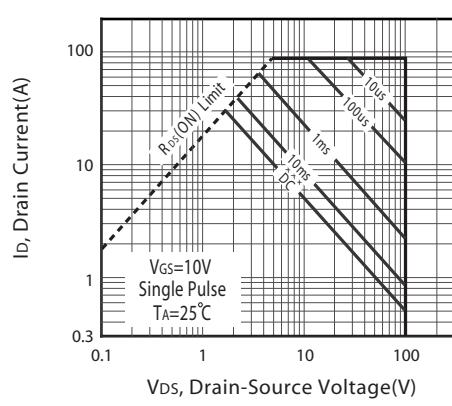
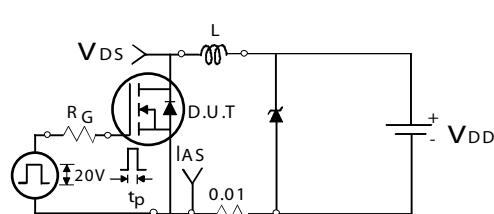


Figure 12. Maximum Safe Operating Area

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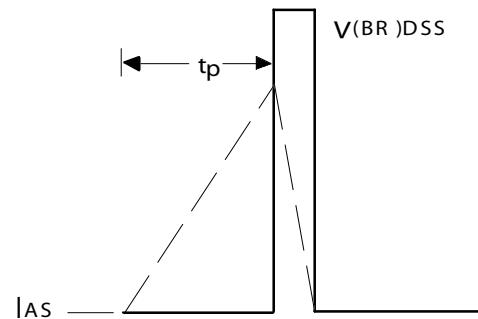
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Unclamped Inductive Test Circuit

Figure 13a.



Unclamped Inductive Waveforms

Figure 13b.

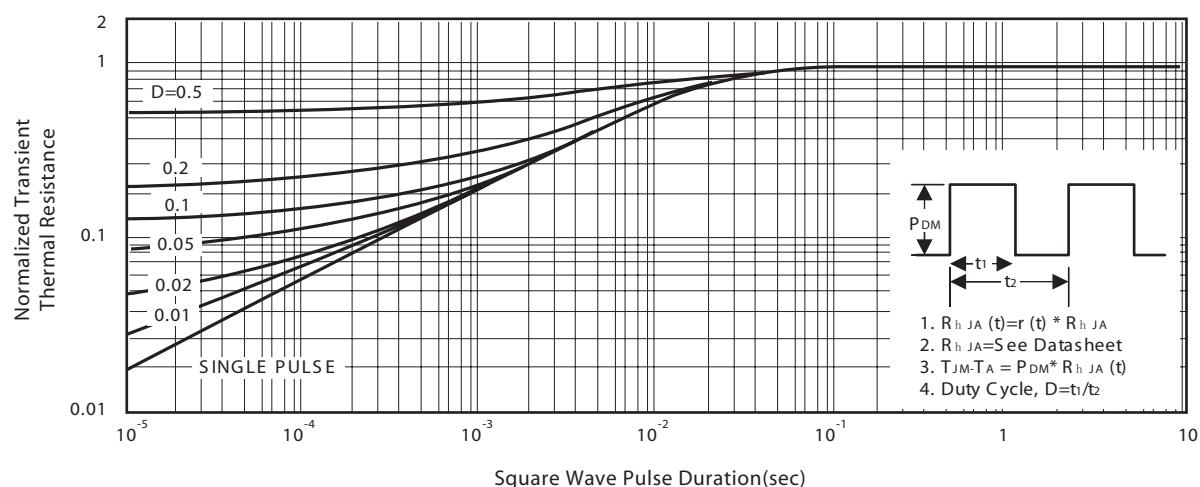
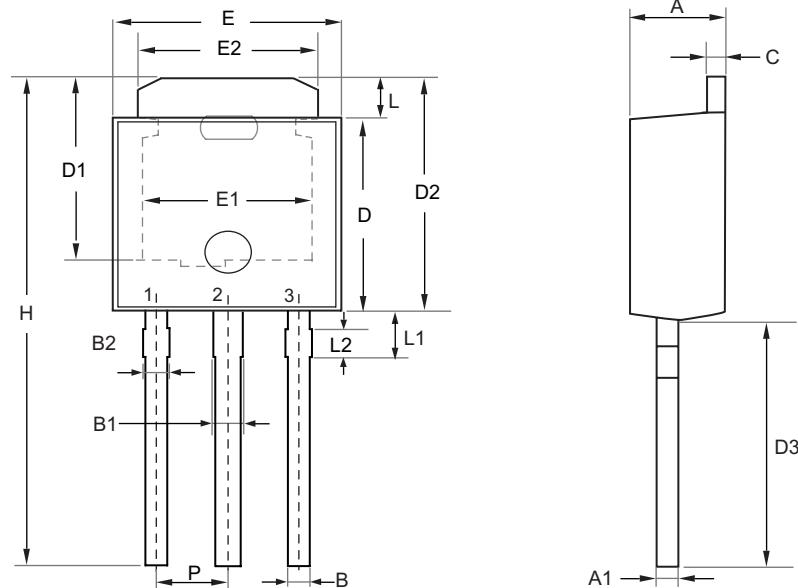


Figure 14. Normalized Thermal Transient Impedance Curve

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PACKAGE OUTLINE DIMENSIONS

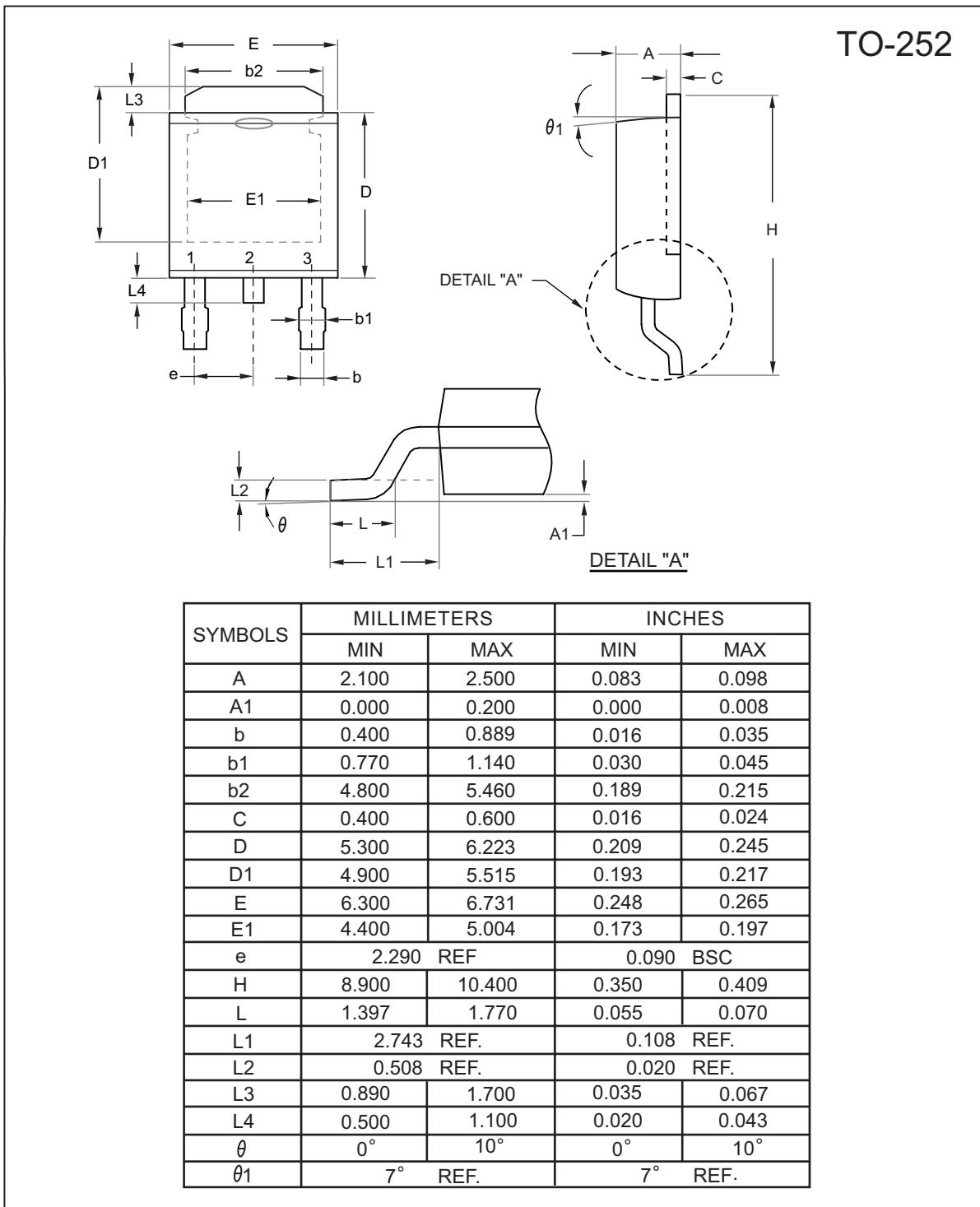
TO-251



SYMBOL	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	2.100	2.500	0.083	0.098
A1	0.350	0.650	0.014	0.026
B	0.400	0.800	0.016	0.031
B1	0.650	1.050	0.026	0.041
B2	0.500	0.900	0.020	0.035
C	0.400	0.600	0.016	0.024
D	5.300	5.700	0.209	0.224
D1	4.900	5.300	0.193	0.209
D2	6.700	7.300	0.264	0.287
D3	7.000	8.000	0.276	0.315
H	13.700	15.300	0.539	0.602
E	6.300	6.700	0.248	0.264
E1	4.600	4.900	0.181	0.193
E2	4.800	5.200	0.189	0.205
L	1.300	1.700	0.051	0.067
L1	1.400	1.800	0.055	0.071
L2	0.500	0.900	0.020	0.035
P	2.300 BSC		0.091 BSC	

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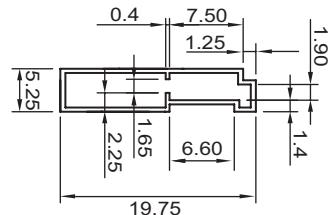
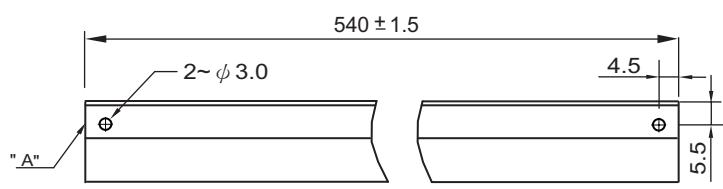
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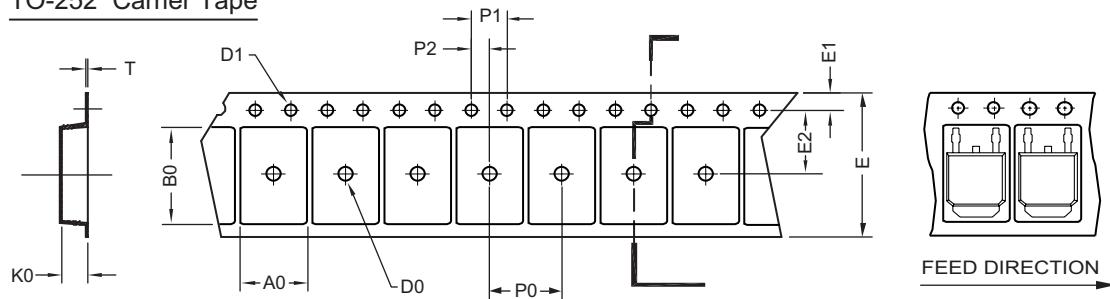
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TO-251 Tube/TO-252 Tape and Reel Data

TO-251 Tube



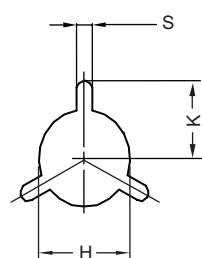
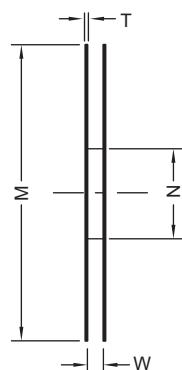
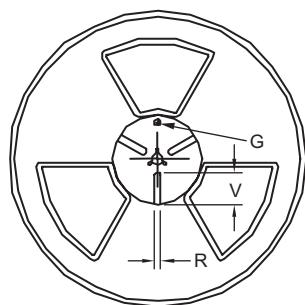
TO-252 Carrier Tape



UNIT:mm

PACKAGE	A0	B0	K0	D0	D1	E	E1	E2	P0	P1	P2	T
TO-252 (16 mm)	6.96 ±0.1	10.49 ±0.1	2.79 ±0.1	ψ 2	ψ 1.5 + 0.1 - 0	16.0 ±0.3	1.75 ±0.1	7.5 ±0.15	8.0 ±0.1	4.0 ±0.1	2.0 ±0.15	0.3 ±0.05

TO-252 Reel



UNIT:mm

TAPE SIZE	REEL SIZE	M	N	W	T	H	K	S	G	R	V
16 mm	ψ 330	ψ 330 ± 0.5	ψ 97 ± 1.0	17.0 + 1.5 - 0	2.2	ψ 13.0 + 0.5 - 0.2	10.6	2.0 ± 0.5	---	---	---

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