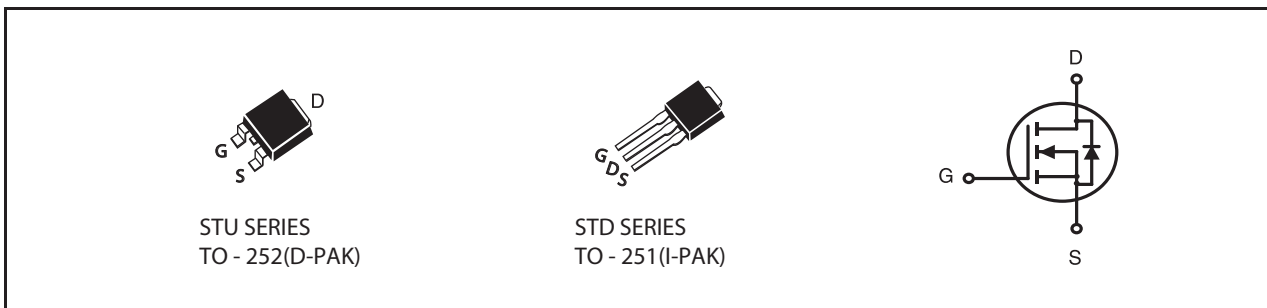


**600V N-Channel Planar MOSFET****PRODUCT SUMMARY**

V _{DSS}	I _D	R _{DS(ON)} (mΩ) Max
600V	1.8A	5.5 @ V _{GS} =10V, I _D =0.9A

FEATURES

- Fast Switching.
- 100% Avalanche Rated.

**ABSOLUTE MAXIMUM RATINGS (T_A=25°C unless otherwise noted)**

Symbol	Parameter	Max.	Units
V _{DSS}	Drain-Source Voltage	600	V
V _{GS}	Gate-Source Voltage	±30	V
I _D	Continuous Drain Current	T _C =25°C	1.8
		T _C =100°C	1.08
I _{DM}	Pulsed Drain Current, V _{GS} =10V ^a	7.2	A
E _{AS}	Single Pulse Avalanche Energy ^b	8.6	mJ
dv/dt	Peak Diode Recovery Energy ^c	4.5	V/ns
P _D	Power Dissipation	T _C =25°C	42
	Linear Derating Factor	T _C >25°C	0.33
T _J , T _{STG}	Operating and Storage Temperature Range	-55 to 150	°C

THERMAL CHARACTERISTICS

R _{θ JC}	Thermal Resistance, Junction-to-Case	3	°C/W
R _{θ JA}	Thermal Resistance, Junction-to-Ambient	50	°C/W

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ELECTRICAL CHARACTERISTICS (T_A=25°C unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
OFF CHARACTERISTICS						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250μA	600			V
ΔV _{(BR)DSS} /ΔT _J	Breakdown Voltage Temperature Coefficient	Reference to 25°C, I _D =250μA		0.6		V/°C
I _{DSS}	Drain-to-Source Leakage Current	V _{DS} =600V, V _{GS} =0V			20	μA
I _{GSSF}	Gate-Body Leakage Current, Forward	V _{DS} =0V, V _{GS} =30V			100	nA
I _{GSSR}	Gate-Body Leakage Current, Reverse	V _{DS} =0V, V _{GS} =-30V			-100	nA
ON CHARACTERISTICS						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	2.0		4.0	V
R _{DS(on)}	Static Drain-Source On-Resistance	V _{GS} =10V, I _D =0.9A ^d			5.5	ohm
g _{FS}	Forward Transconductance	V _{DS} =15V, I _D =0.9A ^d			10	S
DYNAMIC CHARACTERISTICS						
C _{iss}	Input Capacitance	V _{DS} =25V, V _{GS} =0V f=1.0MHz		218		pF
C _{oss}	Output Capacitance			32		pF
C _{rSS}	Reverse Transfer Capacitance			3		pF
SWITCHING CHARACTERISTICS						
t _{D(on)}	Turn-On Delay Time	V _{DD} =300V I _D =1.8A R _G =10 ohm, R _D =166.7 ohm V _{GS} =10V ^d		12		ns
t _r	Turn-On Rise Time			35		ns
t _{D(off)}	Turn-Off Delay Time			22		ns
t _f	Turn-Off Fall Time			46		ns
Q _g	Total Gate Charge	V _{DS} =300V, I _D =1.8A, V _{GS} =10V ^d		8		nC
Q _{gs}	Gate-Source Charge			1.2		nC
Q _{gd}	Gate-Drain("Miller") Charge			4.6		nC
DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS						
I _S	Maximum Continuous Source Current(Body Diode)				1.8	A
I _{SM}	Maximum Pulsed Source Current(Body Diode)				7.2	A
V _{SD}	Drain-Source Diode Forward Voltage	V _{GS} =0V, I _S =1.8A ^d			1.5	V
Notes :						
a. Repetitive Rating : Pulse width limited by maximum junction temperature.						
b. V _{DD} =50V, starting T _J =25°C, L=53mH, R _G =25Ω, I _{AS} =1.8A						
c. I _{SD} ≤ 1.8A, di/dt ≤ 100A/μs, V _{DD} ≤ V _{(BR)DSS} , T _J ≤ 150°C						
d. Pulse Test : Pulse width ≤ 300μs, Duty cycle ≤ 2%.						

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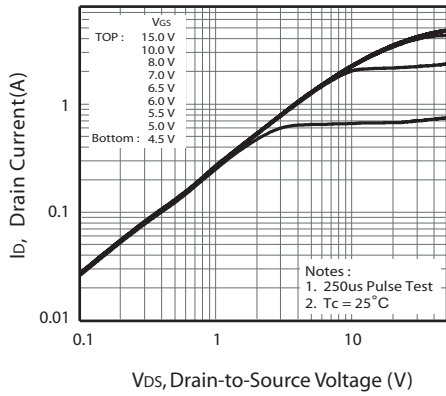


Figure 1. Output Characteristics

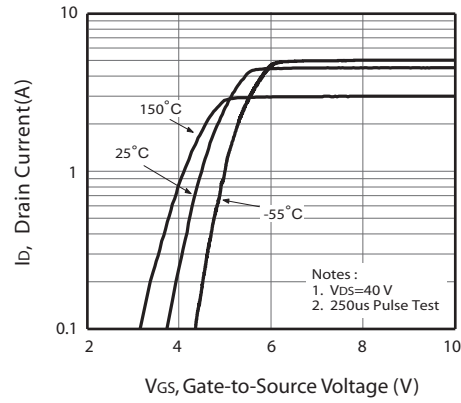


Figure 2. Transfer Characteristics

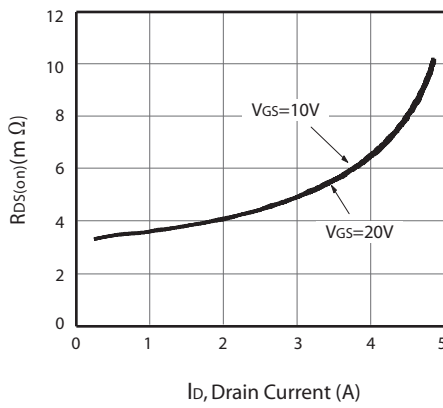


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

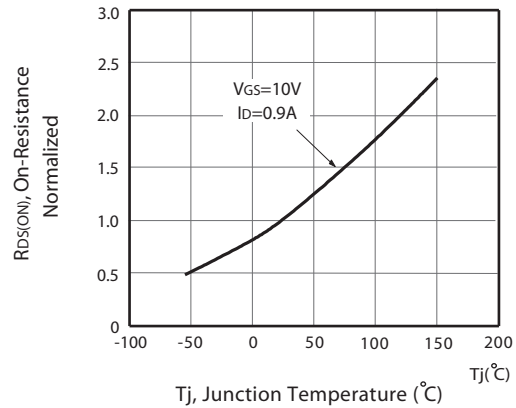


Figure 4. On-Resistance Variation with Drain Current and Temperature

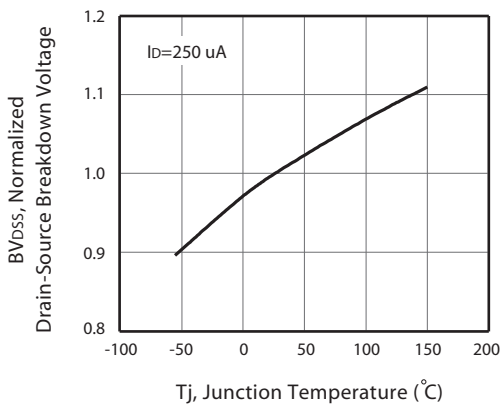


Figure 5. Breakdown Voltage Variation with Temperature

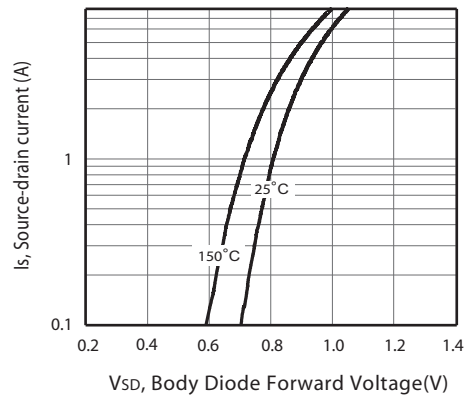


Figure 6. Body Diode Forward Voltage Variation with Source Current

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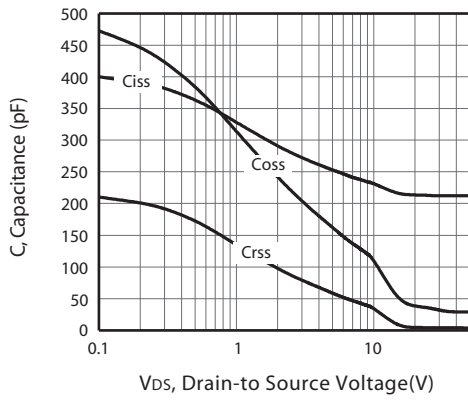


Figure 7. Capacitance

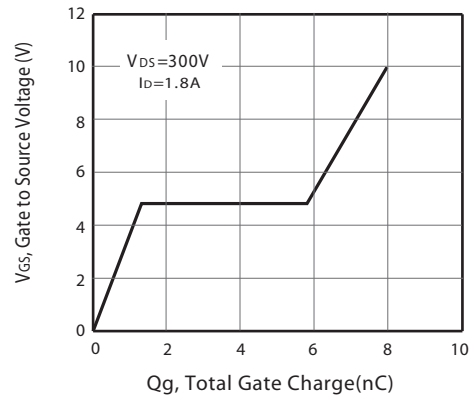


Figure 8. Gate Charge

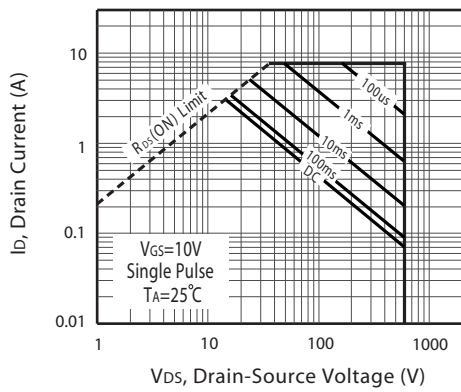
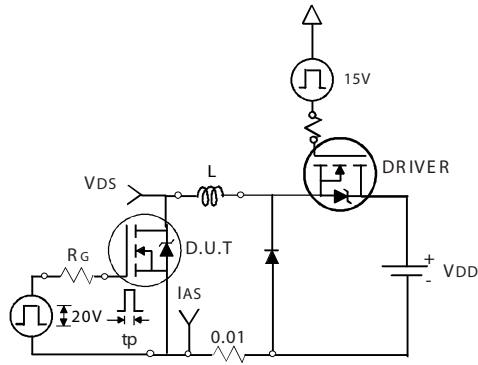
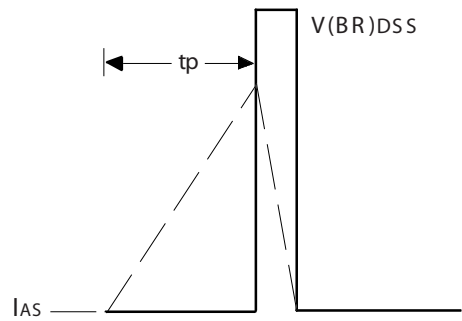


Figure 9. Maximum Safe Operating Area



Unclamped Inductive Test Circuit

Figure 10a.



Unclamped Inductive Waveforms

Figure 10b.

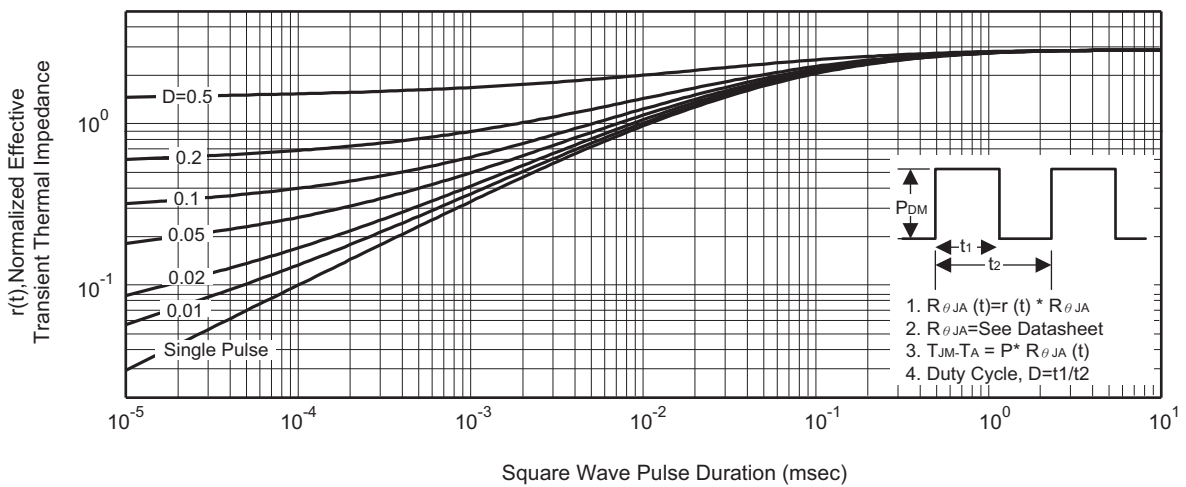


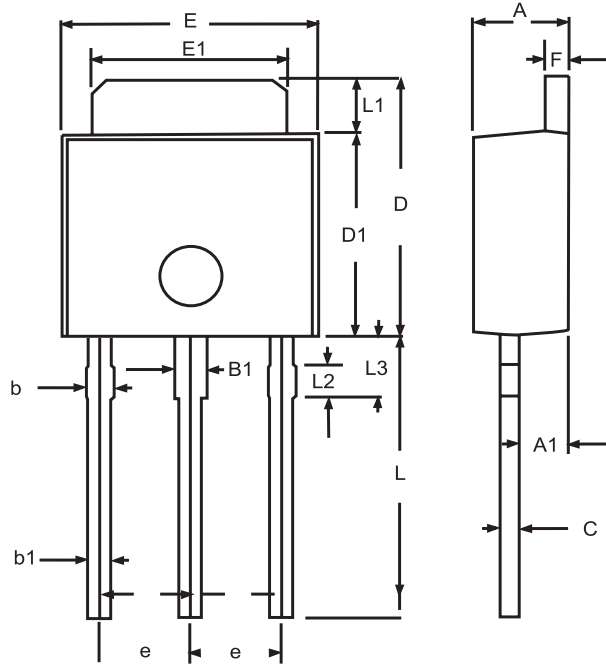
Figure 11. Normalized Thermal Transient Impedance Curve

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PACKAGE OUTLINE DIMENSIONS

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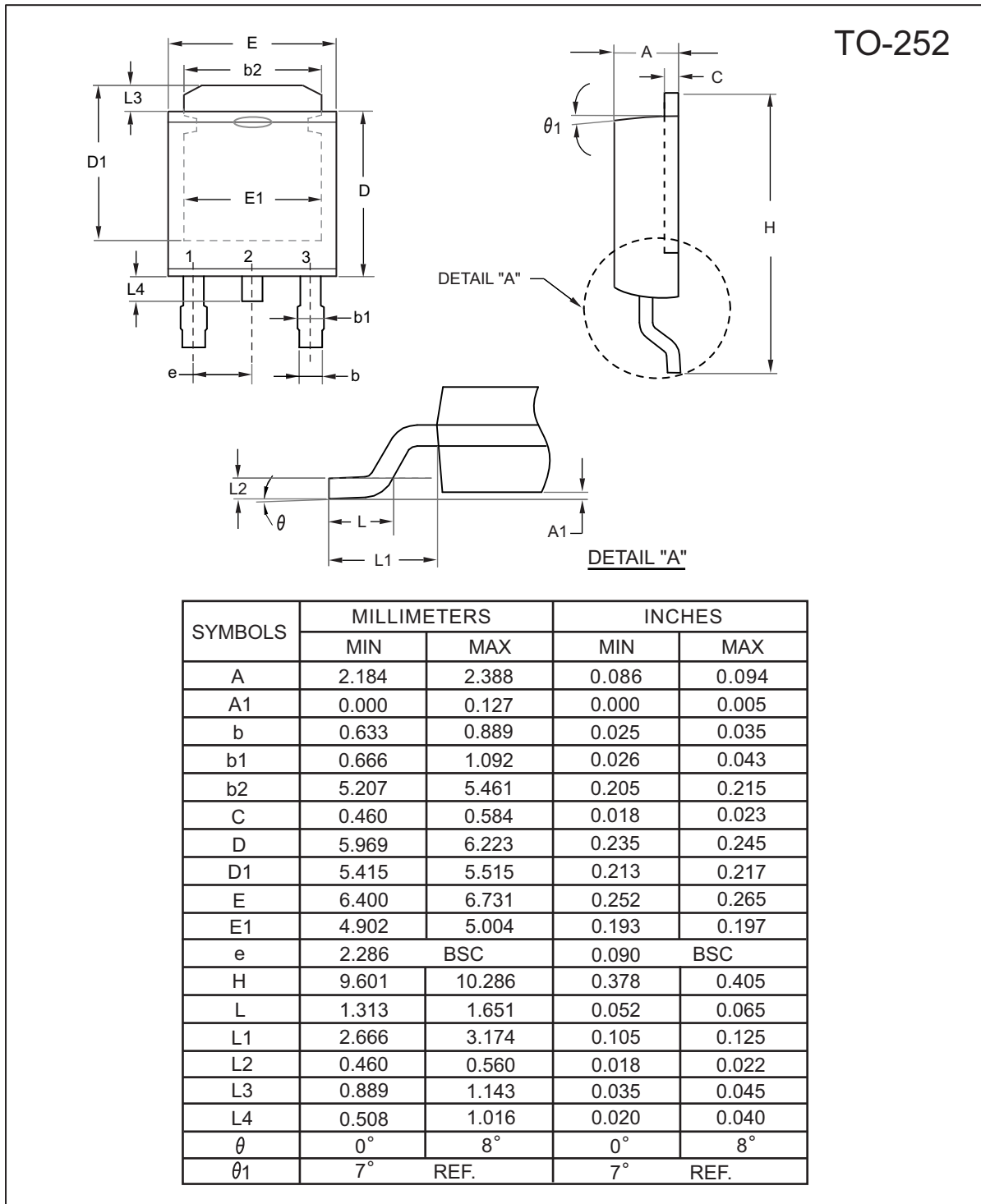


SYMBOLS	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	2.20	2.40	0.087	0.095
A1	1.100	1.300	0.043	0.051
B1	0.650	1.050	0.026	0.041
b	0.500	0.900	0.020	0.035
b1	0.400	0.800	0.016	0.32
C	0.400	0.600	0.016	0.024
D	6.700	7.300	0.264	0.287
D1	5.400	5.650	0.213	0.222
E	6.40	6.650	0.252	0.262
e	2.100	2.500	0.083	0.098
F	0.400	0.600	0.016	0.024
L	7.000	8.000	0.276	0.315
L1	1.300	1.700	0.051	0.067
L2	0.700	0.900	0.028	0.035
L3	1.400	1.800	0.055	0.071

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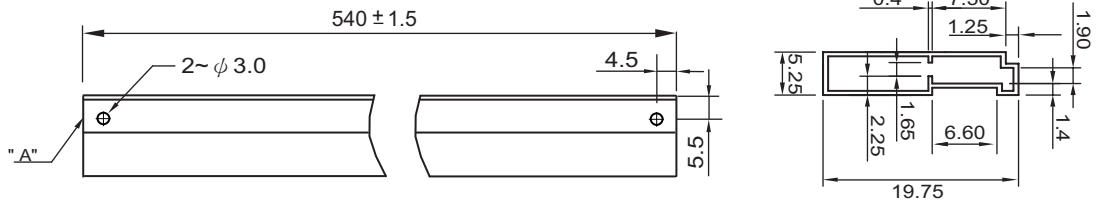
Preliminary



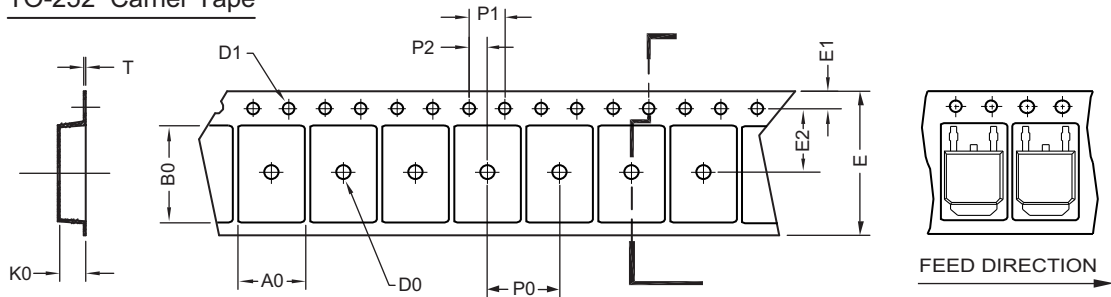
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TO-251 Tube/TO-252 Tape and Reel Data

TO-251 Tube



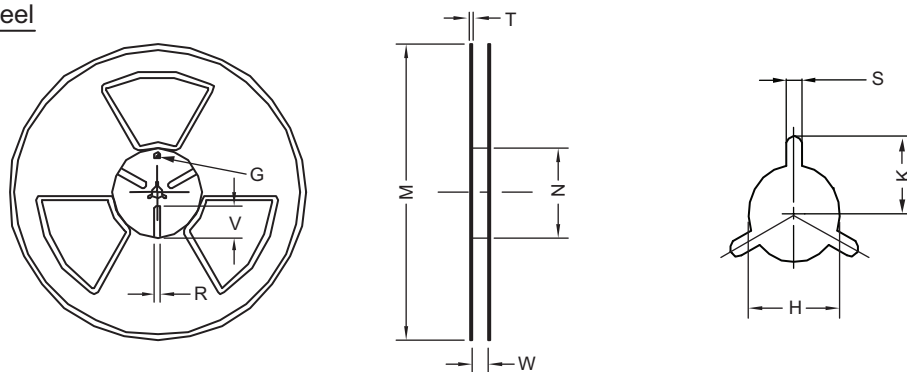
TO-252 Carrier Tape



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	φ2	φ1.5 +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	φ 330	φ 330 ±0.5	φ 97 ±1.0	17.0 +1.5 -0	2.2	φ 13.0 +0.5 -0.2	10.6	2.0 ±0.5	---	---	---