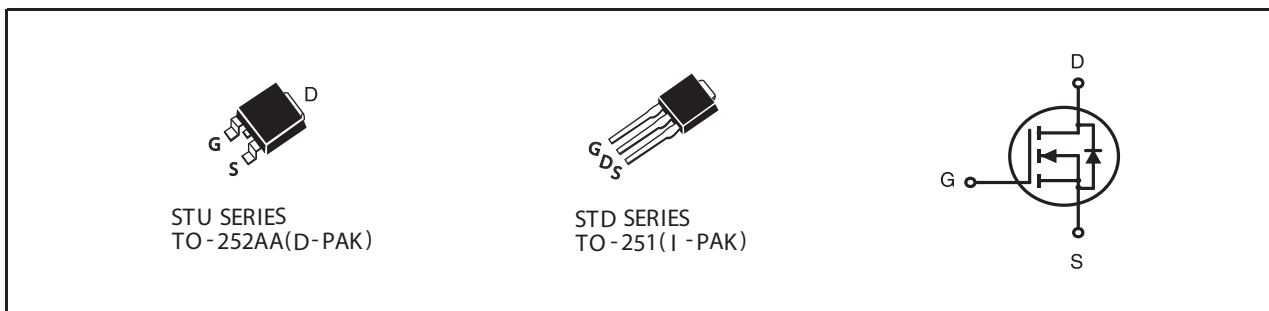


**N-Channel Logic Level Enhancement Mode Field Effect Transistor****PRODUCT SUMMARY**

VDSS	ID	RDS(ON) (mΩ) Typ
200V	8A	306 @ VGS=10V
		328 @ VGS=4.5V

FEATURES

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

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

Symbol	Parameter	Limit	Units
V_{DS}	Drain-Source Voltage	200	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Drain Current-Continuous ^c	$T_C=25^\circ\text{C}$	8
		$T_C=70^\circ\text{C}$	6.4
I_{DM}	-Pulsed ^{a,c}	23	A
E_{AS}	Single Pulse Avalanche Energy ^d	16	mJ
P_D	Maximum Power Dissipation	$T_C=25^\circ\text{C}$	50
		$T_C=70^\circ\text{C}$	32
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	2.5	$^\circ\text{C/W}$
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	50	$^\circ\text{C/W}$

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

Symbol	Parameter	Conditions	Min	Typ	Max	Units
OFF CHARACTERISTICS						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =10mA	200			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =160V, V _{GS} =0V			1	μA
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 =250μA	1	2	3	V
R _{DS(ON)}	Drain-Source On-State Resistance	V _{GS} =10V, I _D =4A		306	370	m ohm
		V _{GS} =4.5V, I _D =3.9A		328	430	m ohm
g _{FS}	Forward Transconductance	V _{DS} =10V, I _D =4A		11		S
DYNAMIC CHARACTERISTICS^b						
C _{ISS}	Input Capacitance	V _{DS} =25V, V _{GS} =0V f=1.0MHz		1040		pF
C _{OSS}	Output Capacitance			63		pF
C _{RSS}	Reverse Transfer Capacitance			30		pF
SWITCHING CHARACTERISTICS^b						
t _{D(ON)}	Turn-On Delay Time	V _{DD} =100V I _D =1A V _{GS} =10V R _{GEN} = 6 ohm		20		ns
t _r	Rise Time			15.5		ns
t _{D(OFF)}	Turn-Off Delay Time			28		ns
t _f	Fall Time			10		ns
Q _g	Total Gate Charge		V _{DS} =100V, I _D =1A, V _{GS} =10V		15	
		V _{DS} =100V, I _D =1A, V _{GS} =4.5V		7.7		nC
Q _{gs}	Gate-Source Charge	V _{DS} =100V, I _D =1A, V _{GS} =10V		2.2		nC
Q _{gd}	Gate-Drain Charge			4		nC
DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS						
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _S =4A		0.81	1.3	V

Notes

- Pulse Test: Pulse Width ≤ 10μs, Duty Cycle ≤ 1%.
- Guaranteed by design, not subject to production testing.
- Drain current limited by maximum junction temperature.
- Starting T_J=25°C, L=0.5mH, V_{DD} = 50V. (See Figure 13)
- Mounted on FR4 Board of 1 inch², 2oz.

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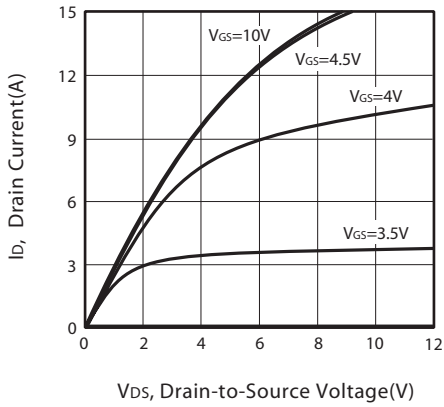


Figure 1. Output Characteristics

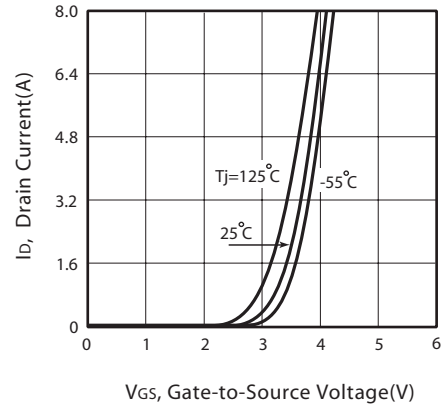


Figure 2. Transfer Characteristics

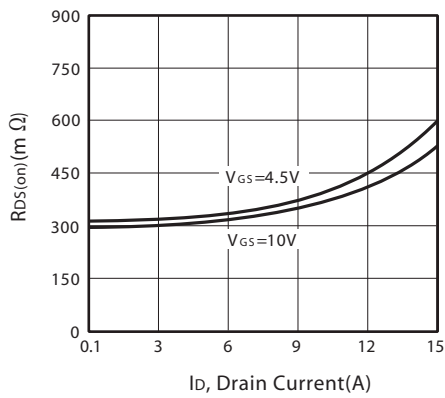


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

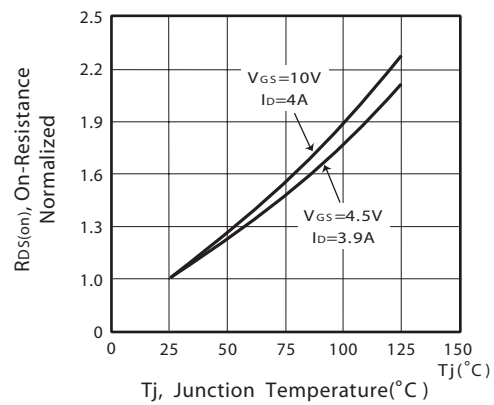


Figure 4. On-Resistance Variation with Drain Current and Temperature

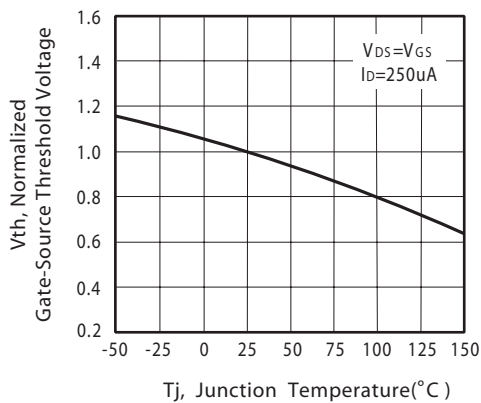


Figure 5. Gate Threshold Variation with Temperature

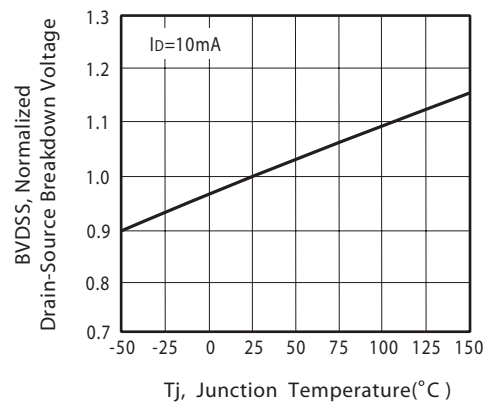


Figure 6. Breakdown Voltage Variation with Temperature

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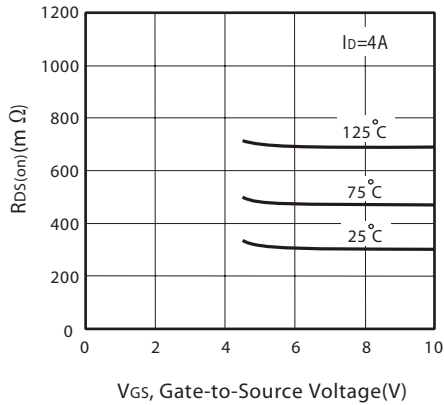


Figure 7. On-Resistance vs. Gate-Source Voltage

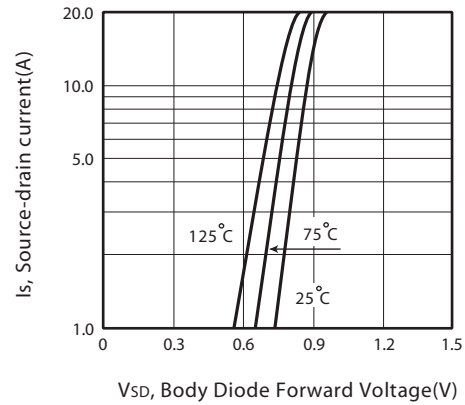


Figure 8. Body Diode Forward Voltage Variation with Source Current

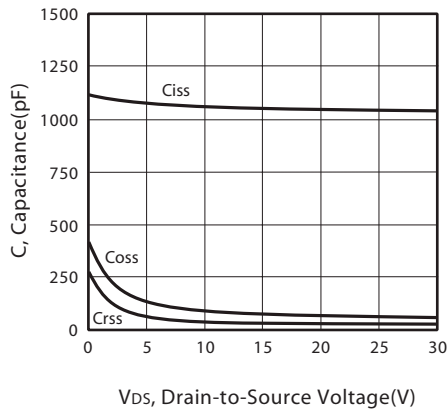


Figure 9. Capacitance

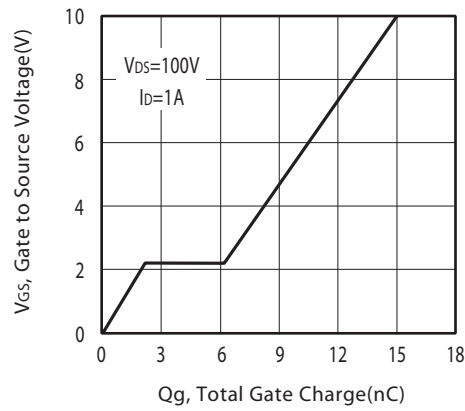


Figure 10. Gate Charge

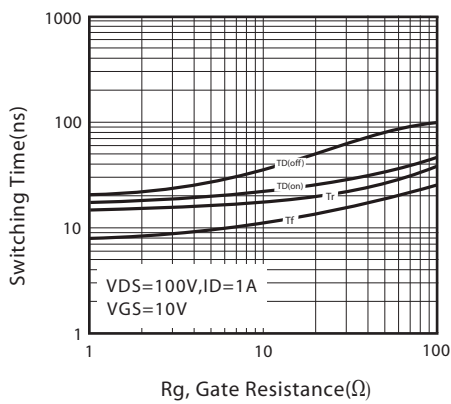


Figure 11. switching characteristics

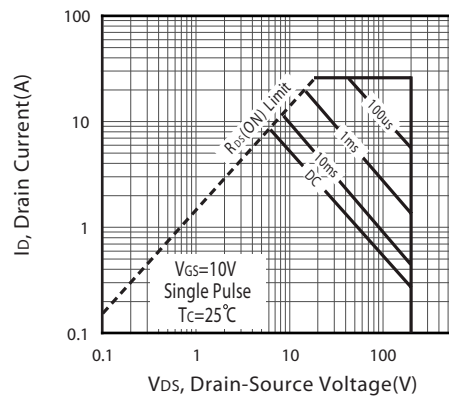
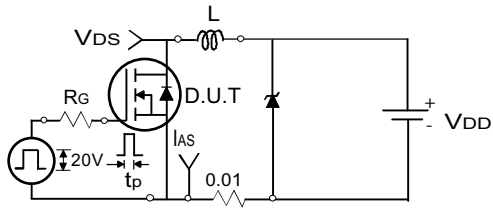


Figure 12. Maximum Safe Operating Area

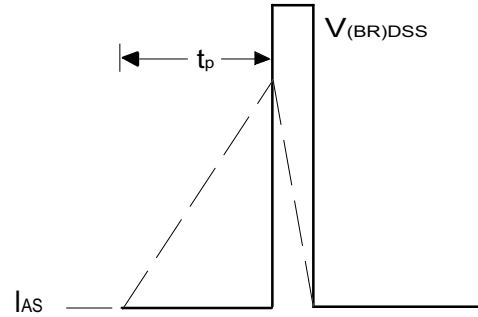
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Uncamped Inductive Test Circuit

Figure 13a.



Unclamped Inductive Waveforms

Figure 13b.

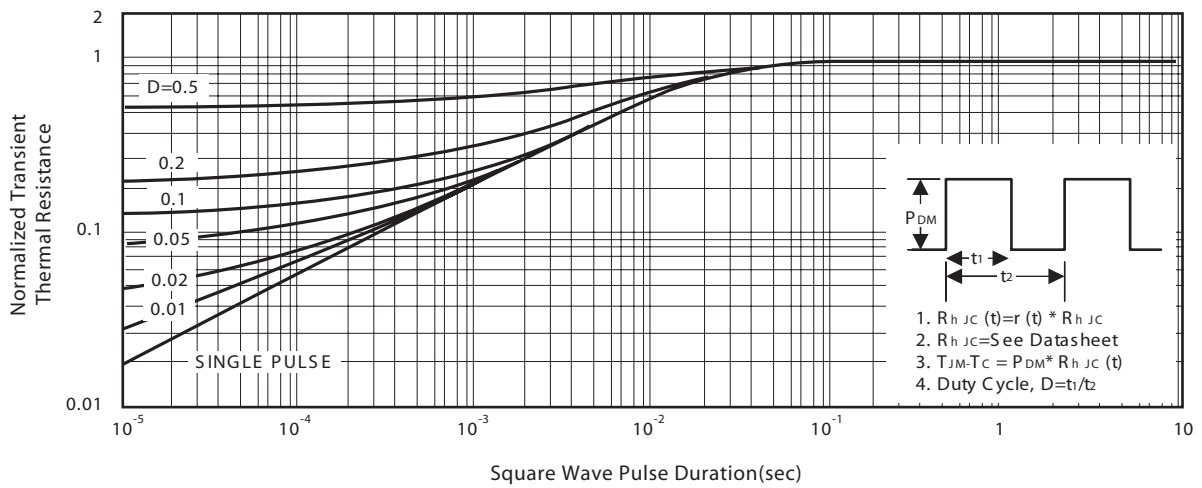
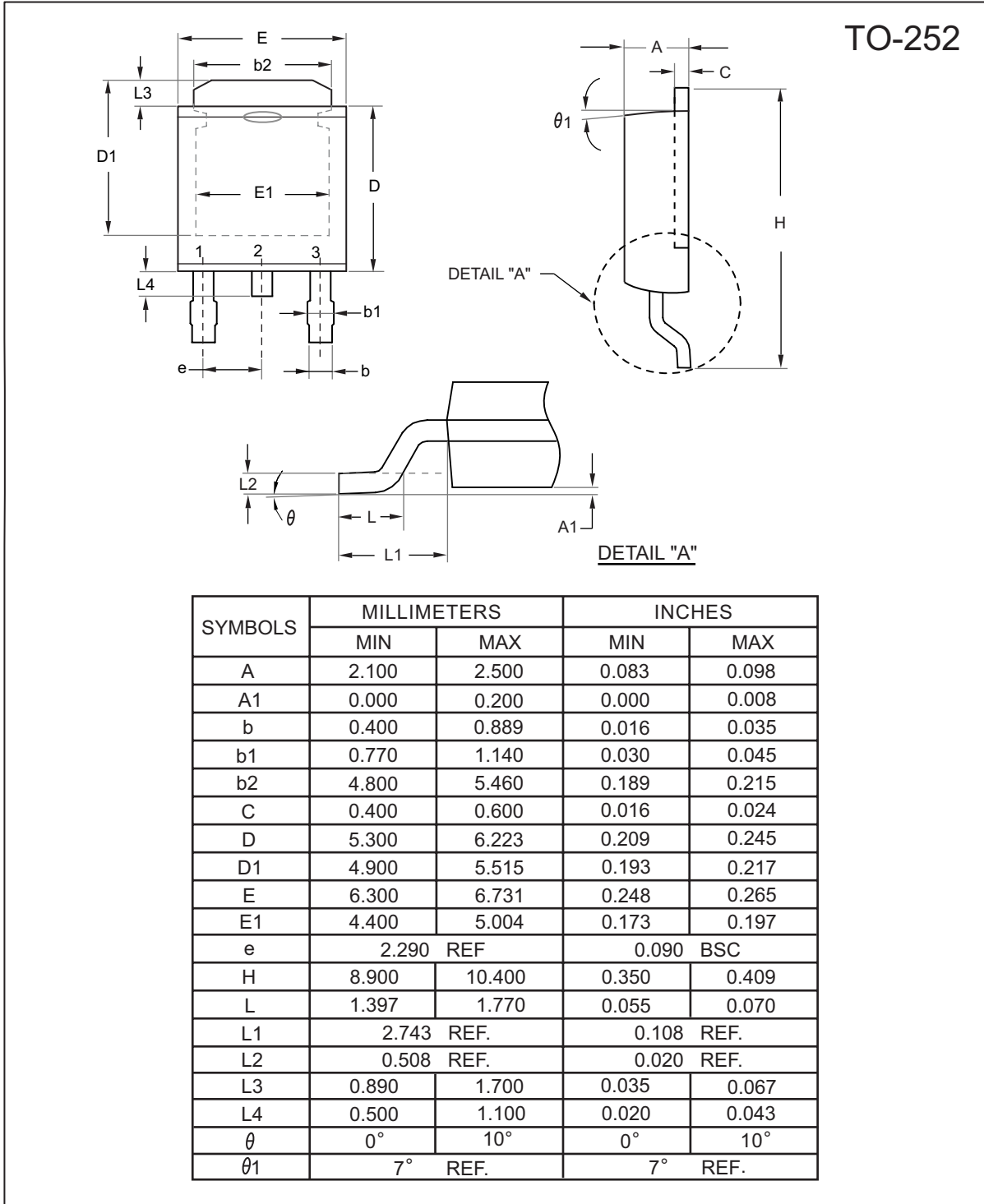


Figure 14. Normalized Thermal Transient Impedance Curve

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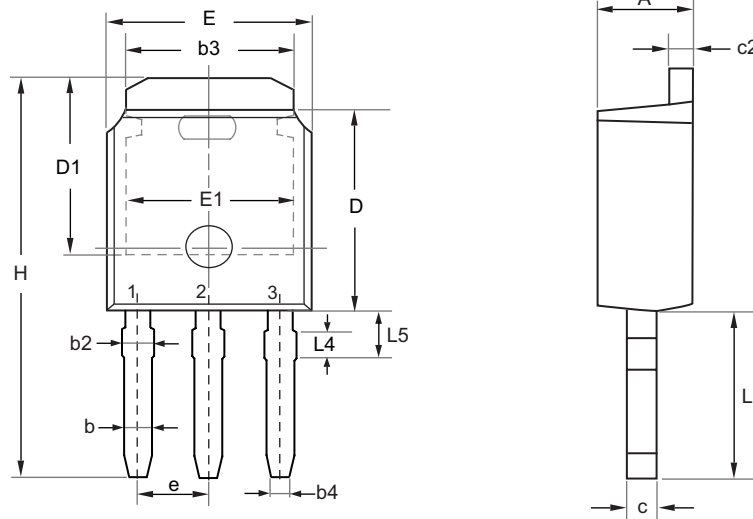
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PACKAGE OUTLINE DIMENSIONS

TO-251



SYMBOL	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
E	6.400	6.731	0.252	0.265
L	3.980	4.280	0.157	0.169
L4	0.698 REF		0.027 REF	
L5	0.972	1.226	0.038	0.048
D	6.000	6.223	0.236	0.245
H	11.050	11.450	0.435	0.450
b	0.640	0.880	0.025	0.035
b2	0.770	1.140	0.030	0.045
b3	5.210	5.460	0.205	0.215
b4	0.450	0.550	0.018	0.022
e	2.286 BSC		0.090 BSC	
A	2.200	2.380	0.087	0.094
c	0.400	0.600	0.016	0.024
c2	0.400	0.600	0.016	0.024
D1	5.100	---	0.201	---
E1	4.400	---	0.173	---

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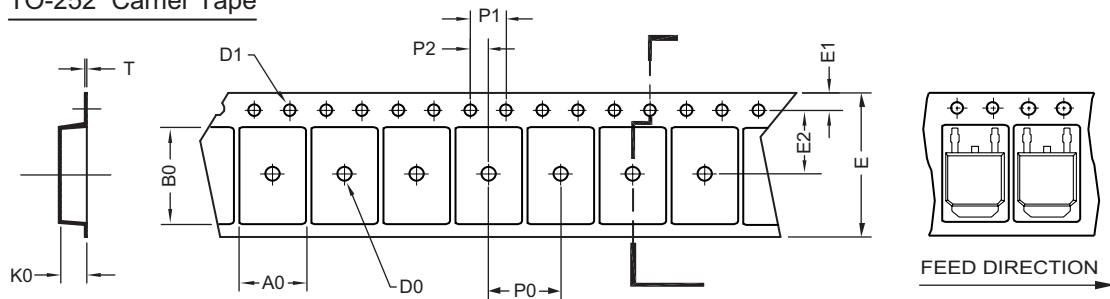
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TO-251 Tube/TO-252 Tape and Reel Data

TO-251 Tube



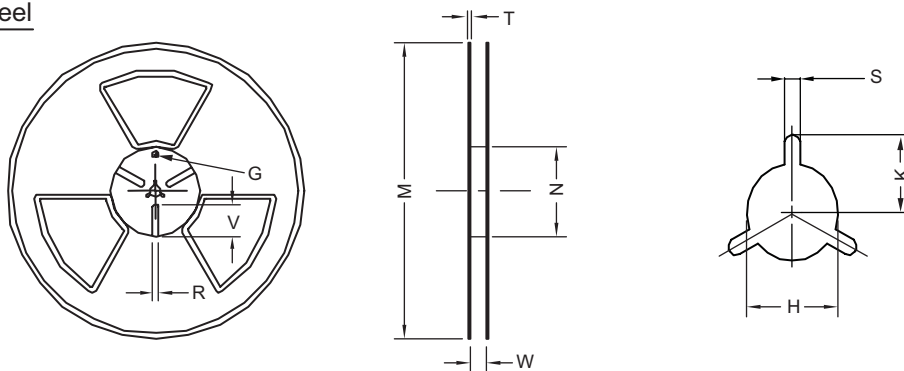
TO-252 Carrier Tape



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	φ 2	φ 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

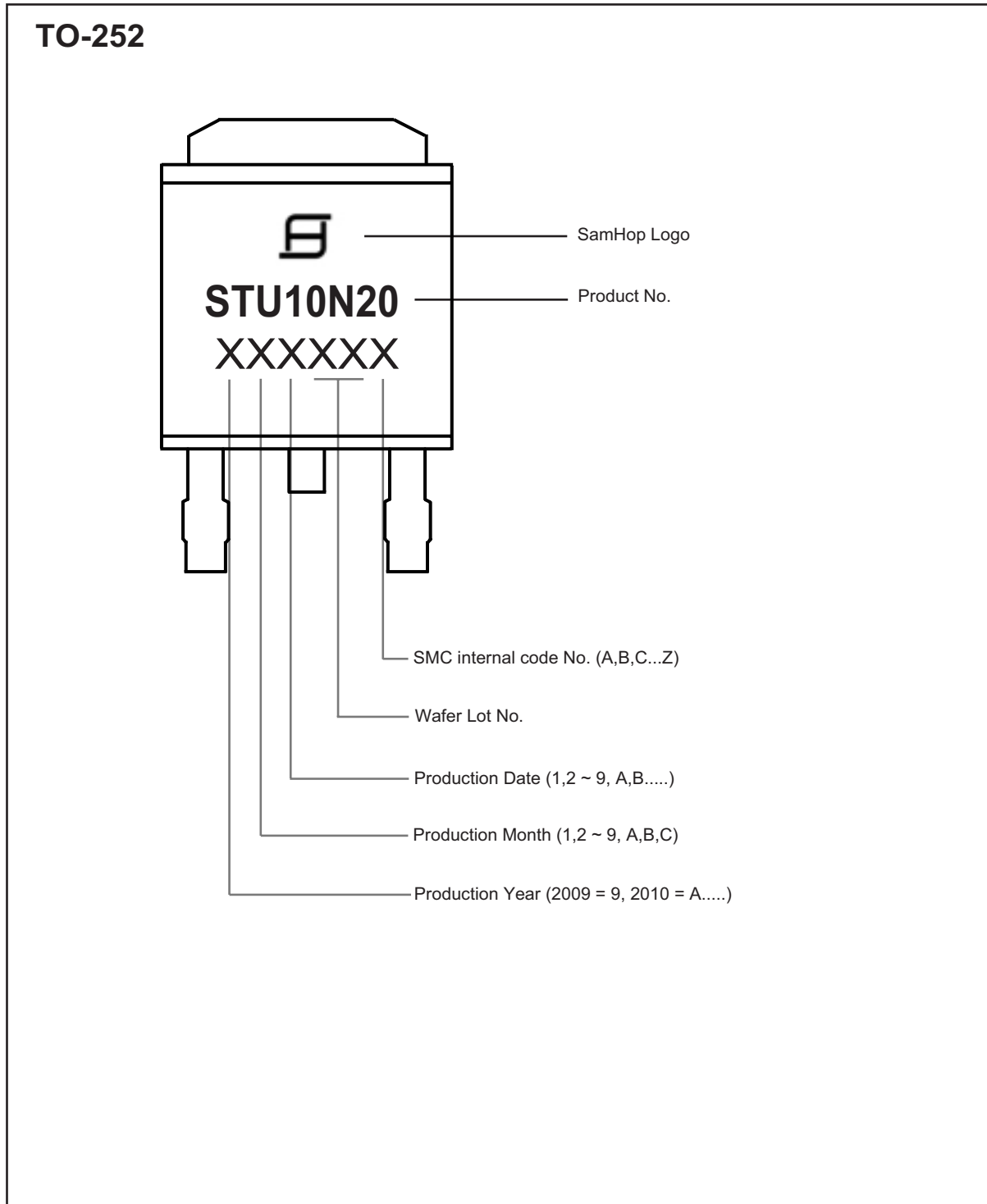
TAPE SIZE	REEL SIZE	M	N	W	T	H	K	S	G	R	V
16 mm	φ 330	φ 330 ± 0.5	φ 97 ± 1.0	17.0 + 1.5 - 0	2.2	φ 13.0 + 0.5 - 0.2	10.6	2.0 ±0.5	---	---	---

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TOP MARKING DEFINITION



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