



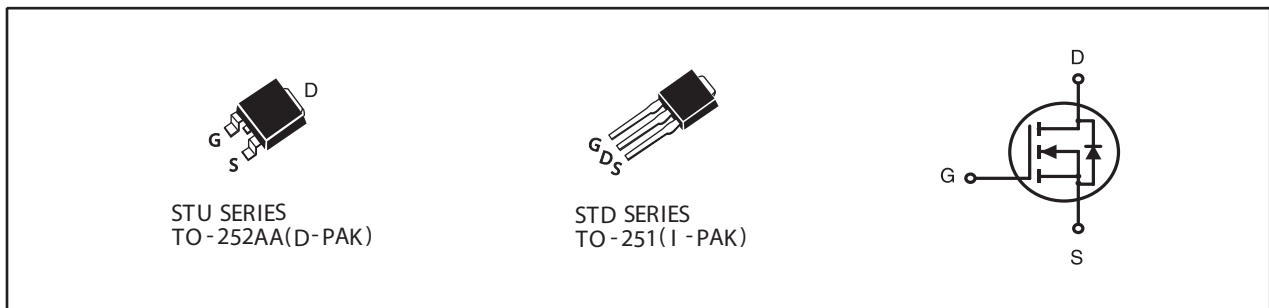
N-Channel Enhancement Mode Field Effect Transistor

PRODUCT SUMMARY

V _{DSS}	I _D	R _{DS(ON)} (Ω) Max
250V	7.5A	0.4 @ V _{GS} =10V

FEATURES

- Super high dense cell design for low R_{DS(ON)}.
- Rugged and reliable.
- TO-252 and TO-251 Package.



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

Symbol	Parameter	Limit	Units	
V _{DS}	Drain-Source Voltage	250	V	
V _{GS}	Gate-Source Voltage	±20	V	
I _D	Drain Current-Continuous ^{a d}	T _C =25°C	7.5	A
		T _C =100°C	4.74	A
I _{DM}	-Pulsed ^b	25	A	
P _D	Maximum Power Dissipation	T _C =25°C	52	W
		T _C =100°C	21	W
T _J , T _{STG}	Operating Junction and Storage Temperature Range	-55 to 150	°C	

THERMAL CHARACTERISTICS

R _{θJC}	Thermal Resistance, Junction-to-Case	2.4	°C/W
R _{θJA}	Thermal Resistance, Junction-to-Ambient	50	°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	250			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =200V , 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	1.9	3	V
R _{DS(ON)}	Drain-Source On-State Resistance	V _{GS} =10V , I _D =3.75A		0.31	0.4	ohm
g _{FS}	Forward Transconductance	V _{DS} =10V , I _D =3.75A		6.5		S
DYNAMIC CHARACTERISTICS ^c						
C _{ISS}	Input Capacitance	V _{DS} =25V, V _{GS} =0V f=1.0MHz		940		pF
C _{OSS}	Output Capacitance			58		pF
C _{RSS}	Reverse Transfer Capacitance			39		pF
SWITCHING CHARACTERISTICS ^c						
t _{D(ON)}	Turn-On Delay Time	V _{DD} =125V I _D =1A V _{GS} =10V R _{GEN} = 6 ohm		19.2		ns
t _r	Rise Time			21		ns
t _{D(OFF)}	Turn-Off Delay Time			29.2		ns
t _f	Fall Time			14.3		ns
Q _g	Total Gate Charge		V _{DS} =125V, I _D =1A, V _{GS} =10V		12.8	
Q _{gs}	Gate-Source Charge	V _{DS} =125V, I _D =1A, V _{GS} =10V		1.7		nC
Q _{gd}	Gate-Drain Charge			4.3		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						
<p>a.Surface Mounted on FR4 Board, t ≤ 10sec.</p> <p>b.Pulse Test:Pulse Width ≤ 300us, Duty Cycle ≤ 2%.</p> <p>c.Guaranteed by design, not subject to production testing.</p> <p>d.Drain current limited by maximum junction temperature.</p>						

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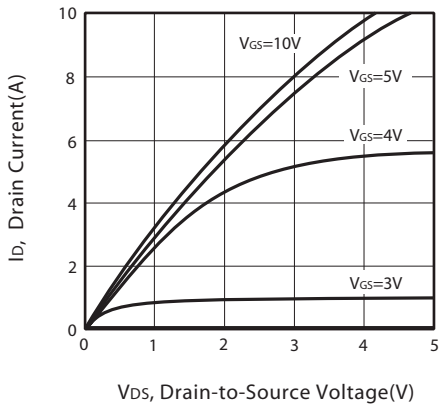


Figure 1. Output Characteristics

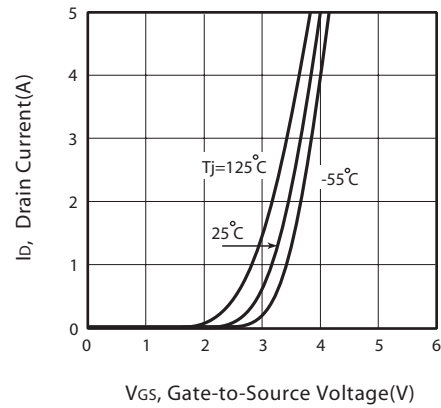


Figure 2. Transfer Characteristics

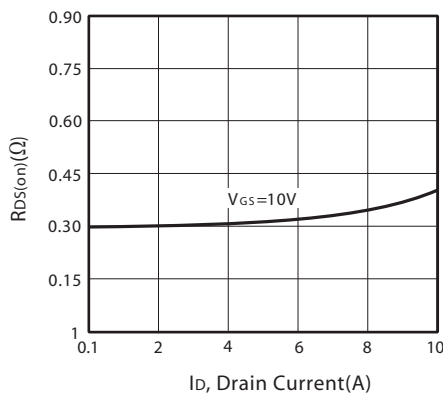


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

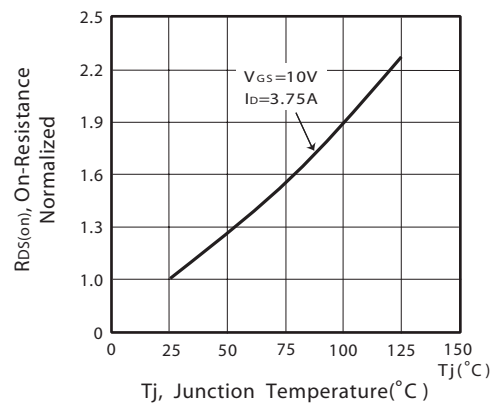


Figure 4. On-Resistance Variation with Drain Current and Temperature

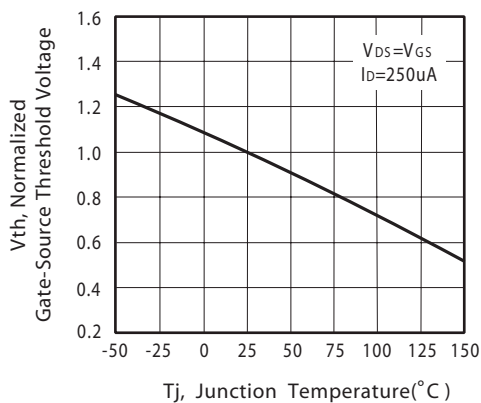


Figure 5. Gate Threshold Variation with Temperature

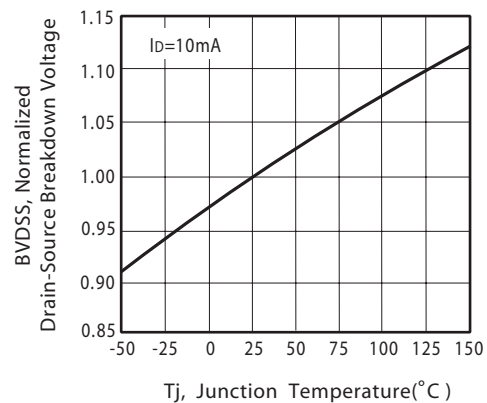


Figure 6. Breakdown Voltage Variation with Temperature

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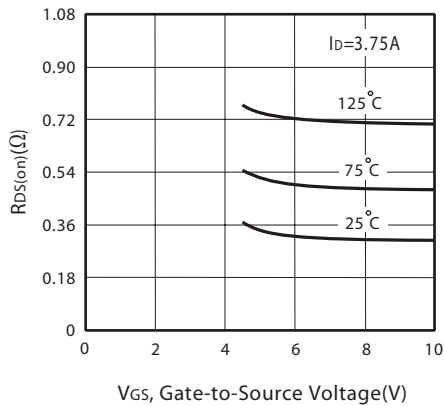


Figure 7. On-Resistance vs. Gate-Source Voltage

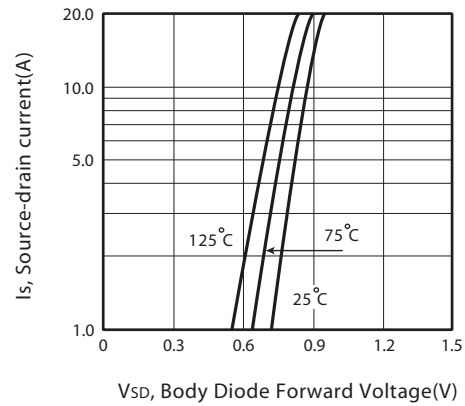


Figure 8. Body Diode Forward Voltage Variation with Source Current

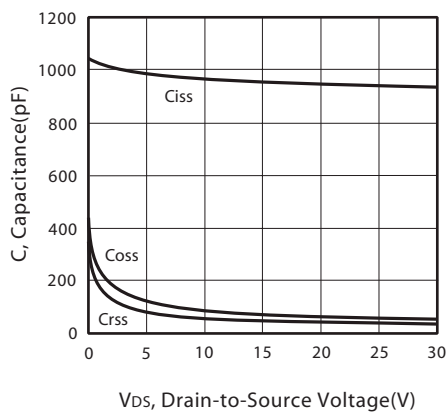


Figure 9. Capacitance

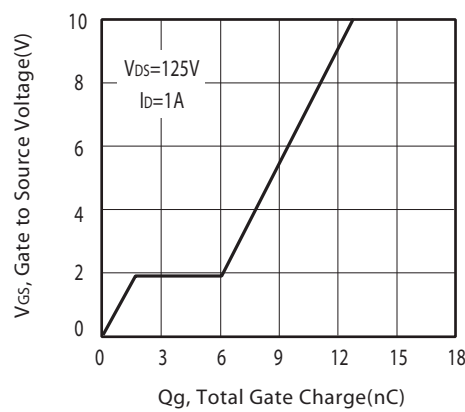


Figure 10. Gate Charge

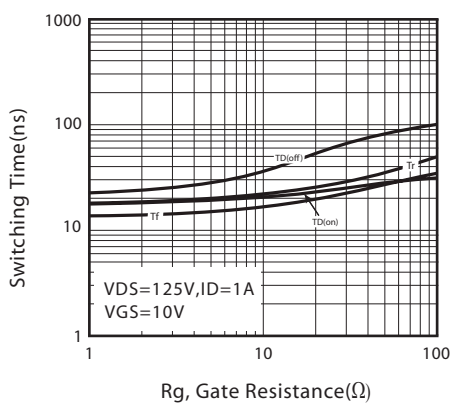


Figure 11. switching characteristics

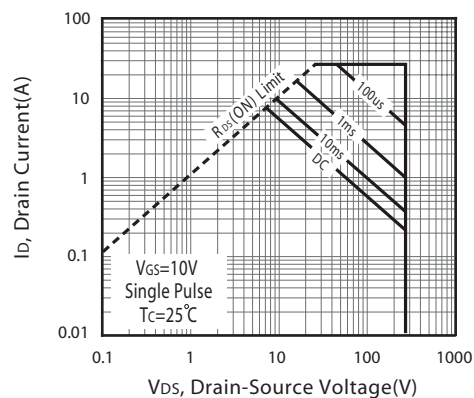
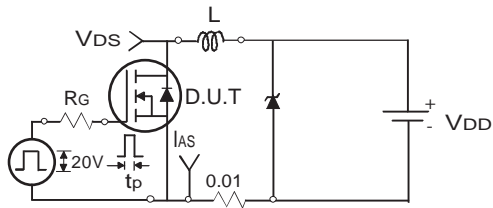


Figure 12. Maximum Safe Operating Area

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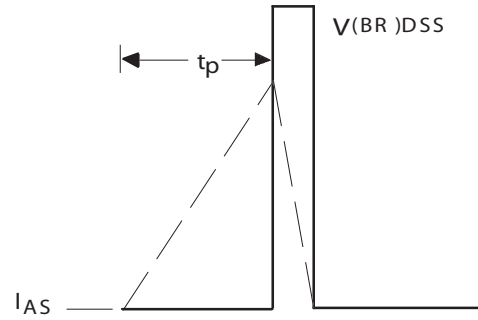
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Uncamped Inductive Test Circuit

Figure 13a.



Unclamped Inductive Waveforms

Figure 13b.

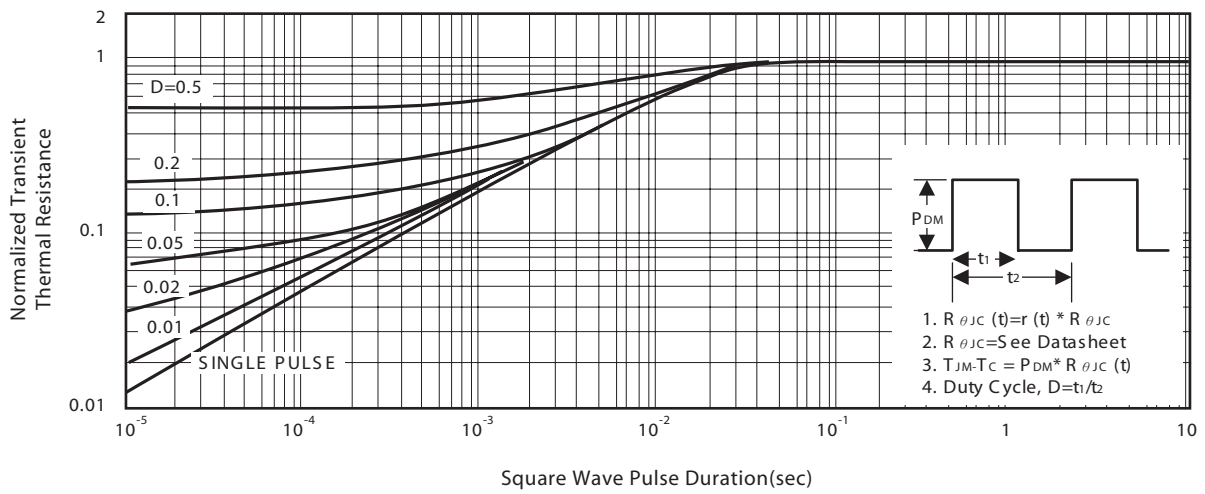
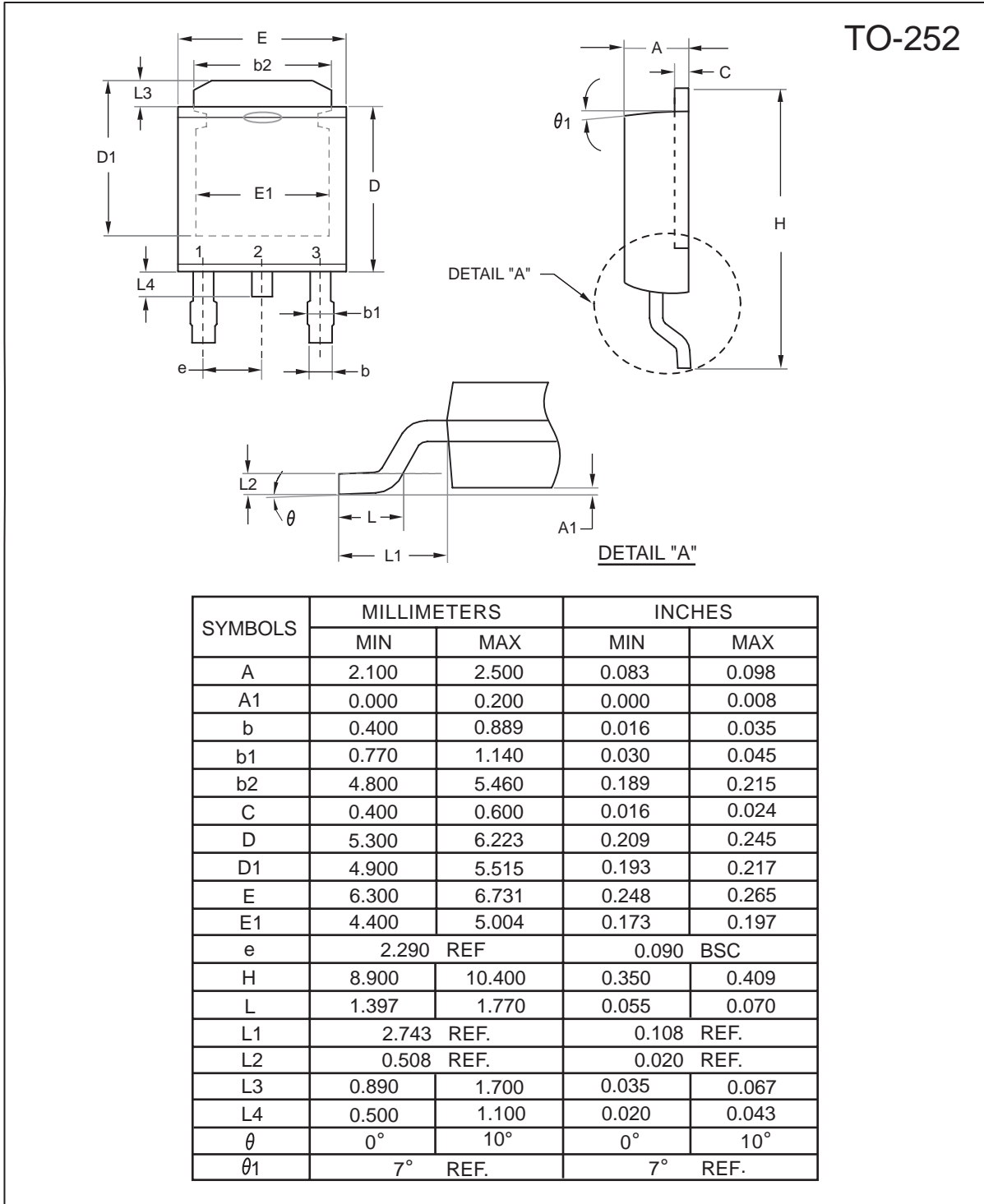


Figure 14. Normalized Thermal Transient Impedance Curve

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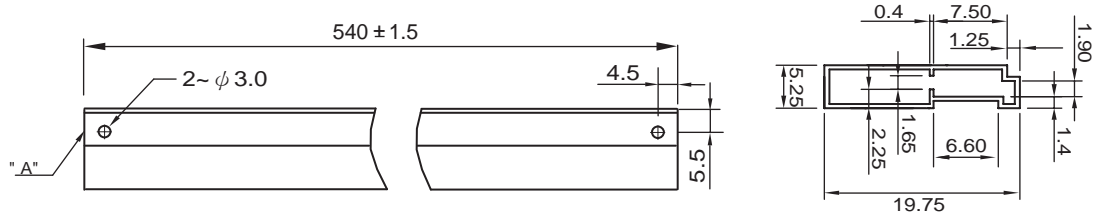
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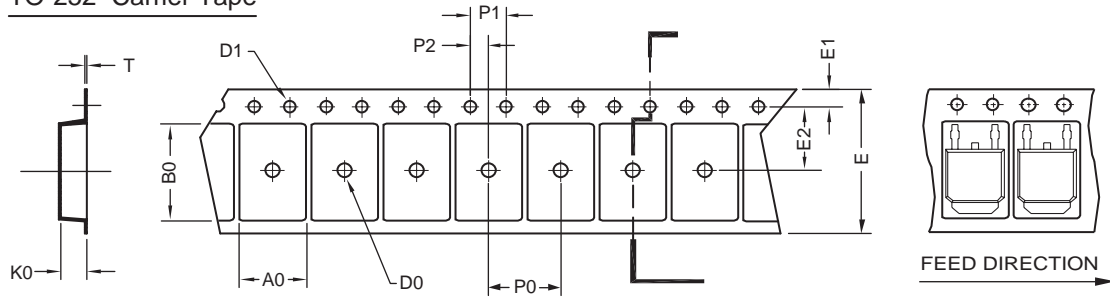
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TO-251 Tube/TO-252 Tape and Reel Data

TO-251 Tube



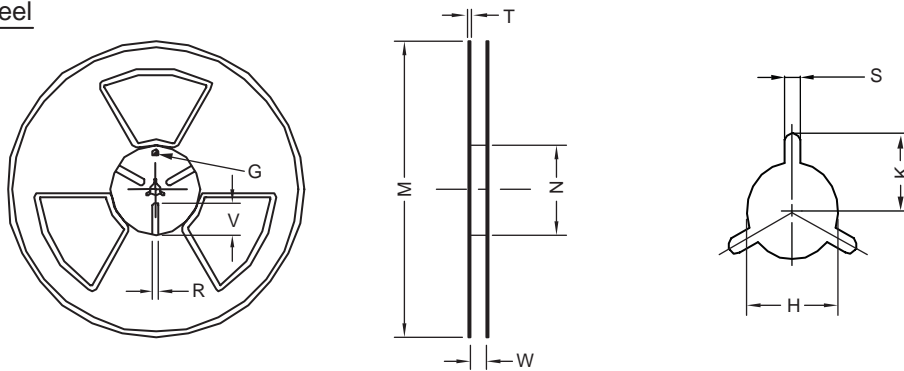
TO-252 Carrier Tape



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	$\phi 2$	$\phi 1.5$ $+ 0.1$ $- 0$	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

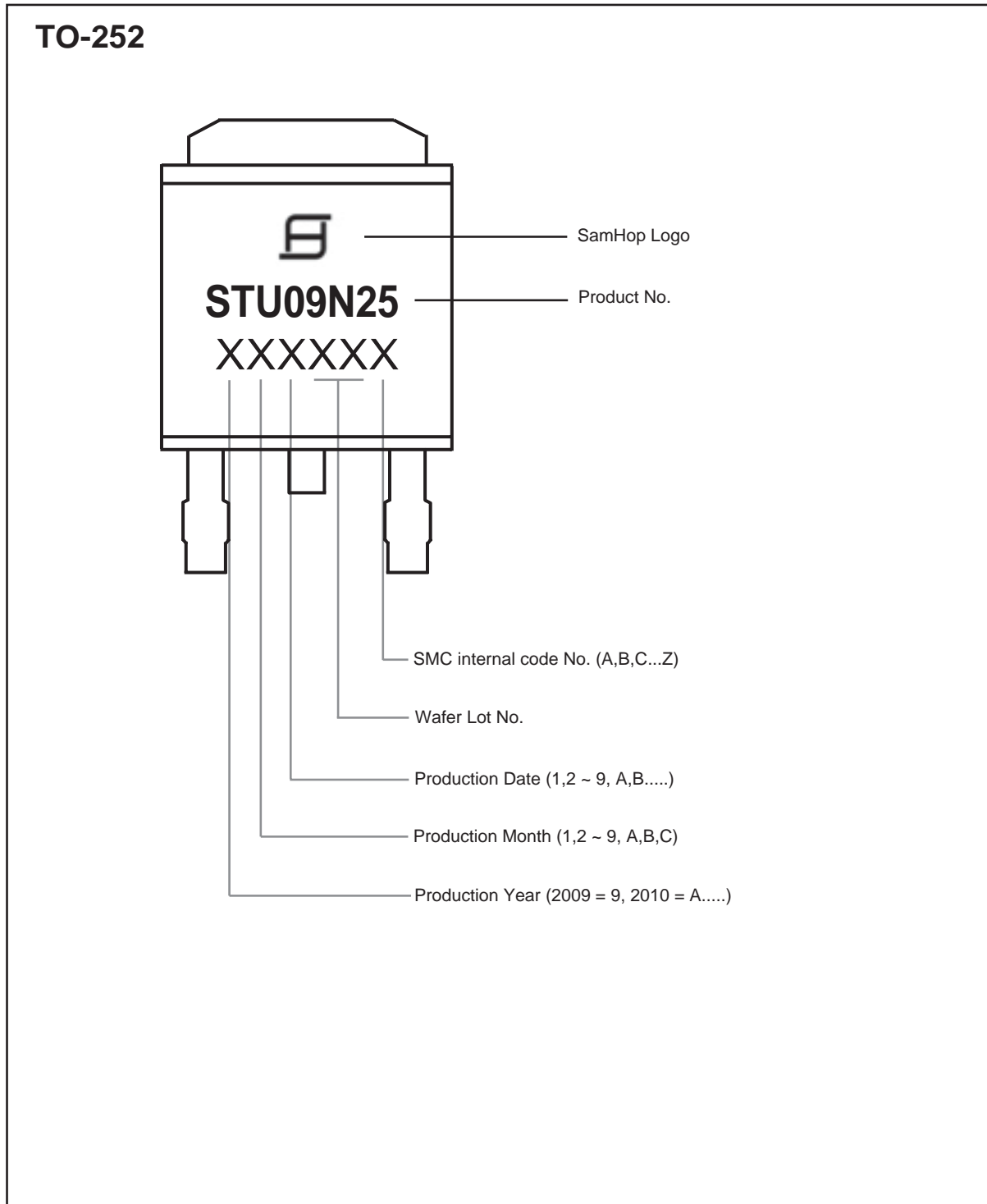
TAPE SIZE	REEL SIZE	M	N	W	T	H	K	S	G	R	V
16 mm	$\phi 330$	$\phi 330$ ± 0.5	$\phi 97$ ± 1.0	17.0 $+ 1.5$ $- 0$	2.2	$\phi 13.0$ $+ 0.5$ $- 0.2$	10.6	2.0 ± 0.5	---	---	---

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TOP MARKING DEFINITION



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