



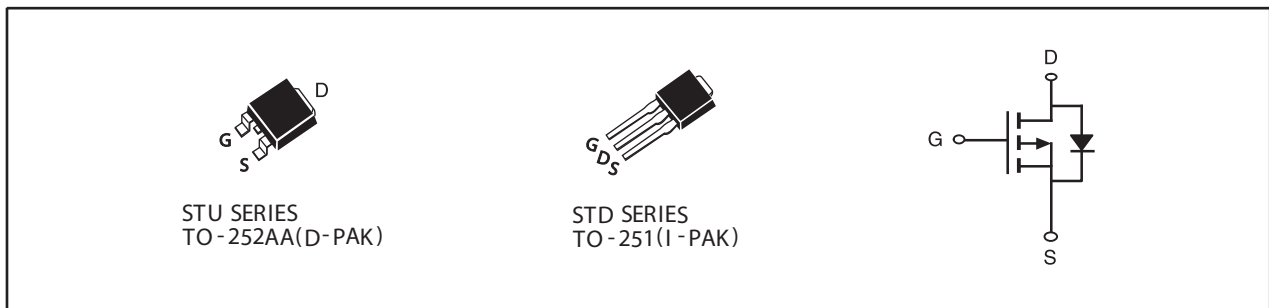
P-Channel Logic Level Enhancement Mode Field Effect Transistor

PRODUCT SUMMARY

V _{DSS}	I _D	R _{DS(ON)} (mΩ) Max
-40V	-32A	16 @ V _{GS} =-10V
		30 @ V _{GS} =-4.5V

FEATURES

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



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

Symbol	Parameter	Limit	Units
V _{DS}	Drain-Source Voltage	-40	V
V _{GS}	Gate-Source Voltage	±20	V
I _D	Drain Current-Continuous ^{a e}	T _C =25°C	-32
		T _C =70°C	-25.6
I _{DM}	-Pulsed ^b	-94	A
E _{AS}	Single Pulse Avalanche Energy ^d	121	mJ
P _D	Maximum Power Dissipation	T _C =25°C	42
		T _C =70°C	27
T _J , T _{STG}	Operating Junction and Storage Temperature Range	-55 to 150	°C

THERMAL CHARACTERISTICS

R _{θJC}	Thermal Resistance, Junction-to-Case	3	°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 _{bss}	Drain-Source Breakdown Voltage	V _{GS} =0V , I _D =-250uA	-40			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-32V , 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	-1	-1.9	-3	V
R _{DS(ON)}	Drain-Source On-State Resistance	V _{GS} =-10V , I _D =-16A		13	16	m ohm
		V _{GS} =-4.5V , I _D =-12A		22	30	m ohm
g _{FS}	Forward Transconductance	V _{DS} =-10V , I _D =-16A		32		S
DYNAMIC CHARACTERISTICS ^c						
C _{ISS}	Input Capacitance	V _{DS} =-20V, V _{GS} =0V f=1.0MHz		2200		pF
C _{OSS}	Output Capacitance			244		pF
C _{RSS}	Reverse Transfer Capacitance			180		pF
SWITCHING CHARACTERISTICS ^c						
t _{D(ON)}	Turn-On Delay Time	V _{DD} =-20V I _D =-1.0A		36		ns
t _r	Rise Time			32		ns
t _{D(OFF)}	Turn-Off Delay Time	V _{GS} =-10V R _{GEN} = 6 ohm		109		ns
t _f	Fall Time			28		ns
Q _g	Total Gate Charge	V _{DS} =-20V, I _D =-16A, V _{GS} =-10V		37		nC
Q _{gs}	Gate-Source Charge	V _{DS} =-20V, I _D =-16A, V _{GS} =-10V		4.3		nC
Q _{gd}	Gate-Drain Charge			12		nC
DRAIN-SOURCE DIODE CHARACTERISTICS						
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _S = -4A		-0.8	-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} = 20V .(See Figure13)						
e.Drain current limited by maximum junction temperature.						

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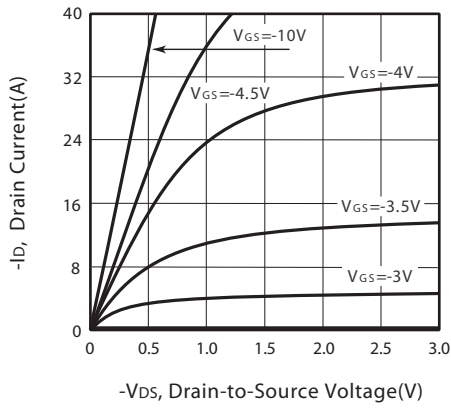


Figure 1. Output Characteristics

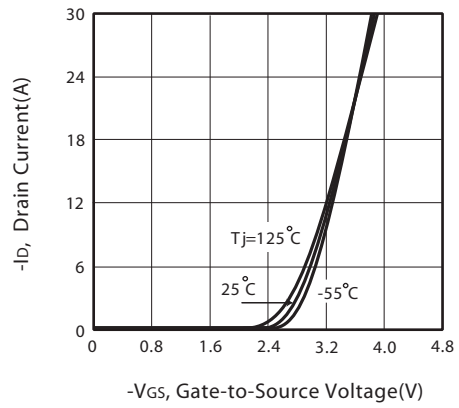


Figure 2. Transfer Characteristics

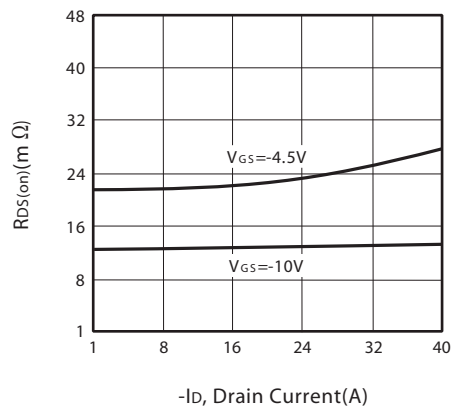


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

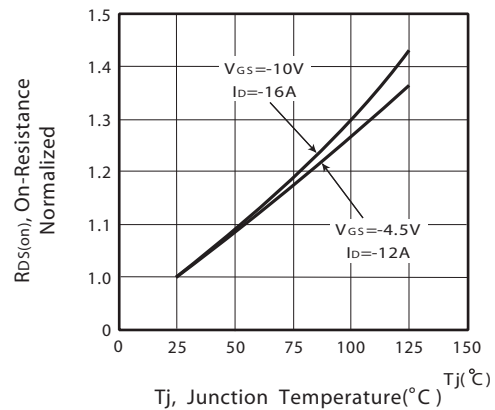


Figure 4. On-Resistance Variation with Drain Current and Temperature

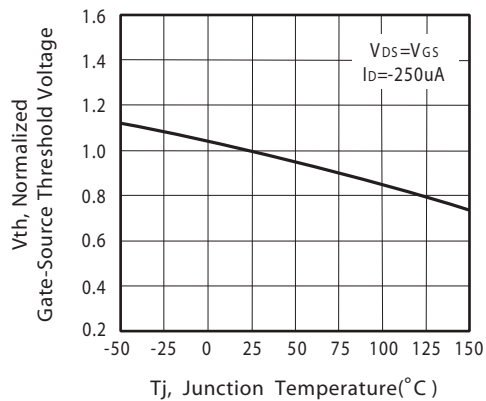


Figure 5. Gate Threshold Variation with Temperature

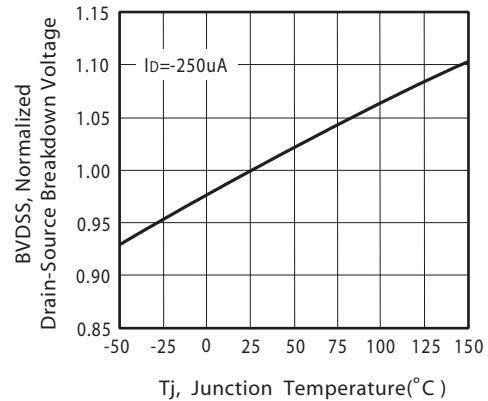


Figure 6. Breakdown Voltage Variation with Temperature

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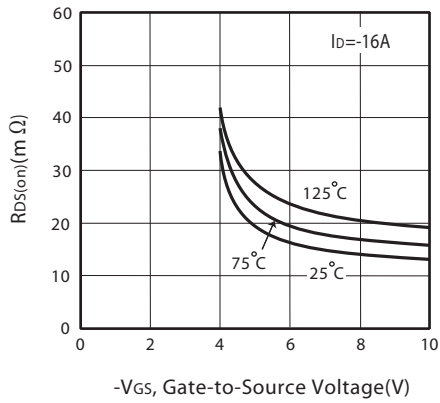


Figure 7. On-Resistance vs. Gate-Source Voltage

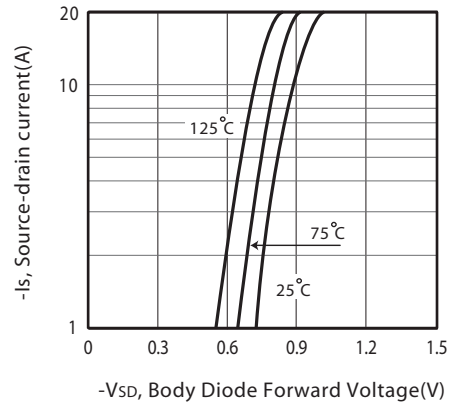


Figure 8. Body Diode Forward Voltage Variation with Source Current

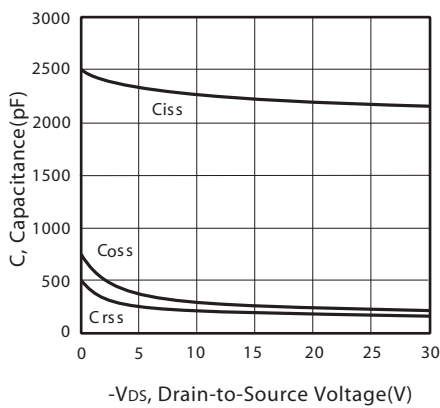


Figure 9. Capacitance

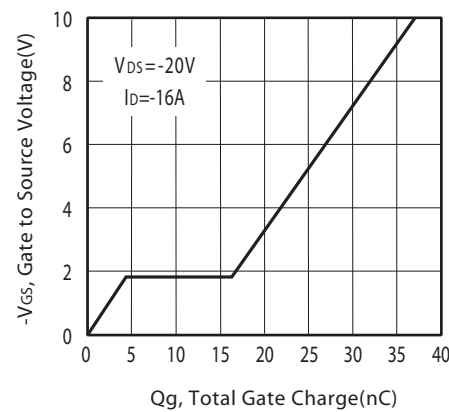


Figure 10. Gate Charge

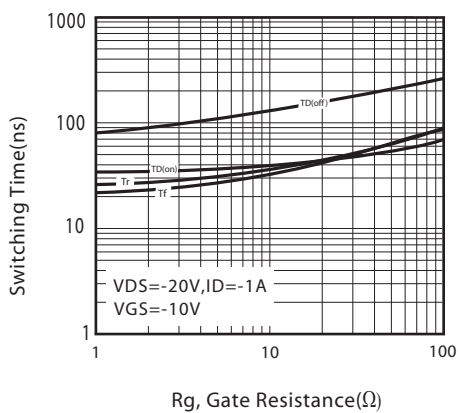


Figure 11. switching characteristics

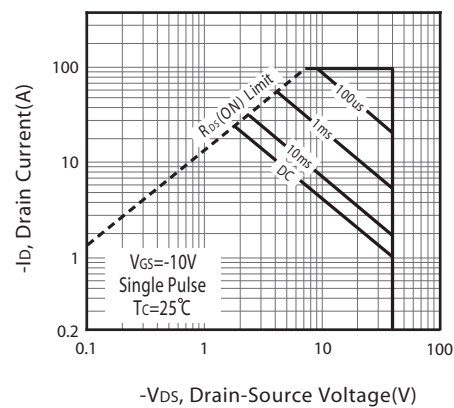
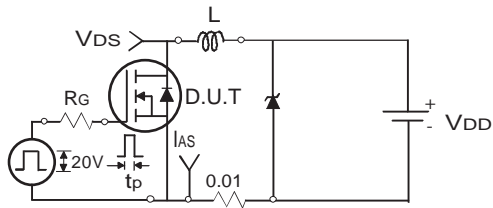


Figure 12. Maximum Safe Operating Area

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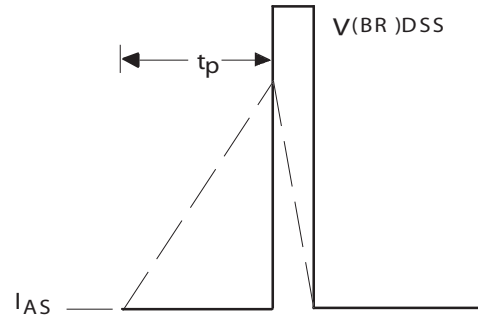
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Uncamped Inductive Test Circuit

Figure 13a.



Unclamped Inductive Waveforms

Figure 13b.

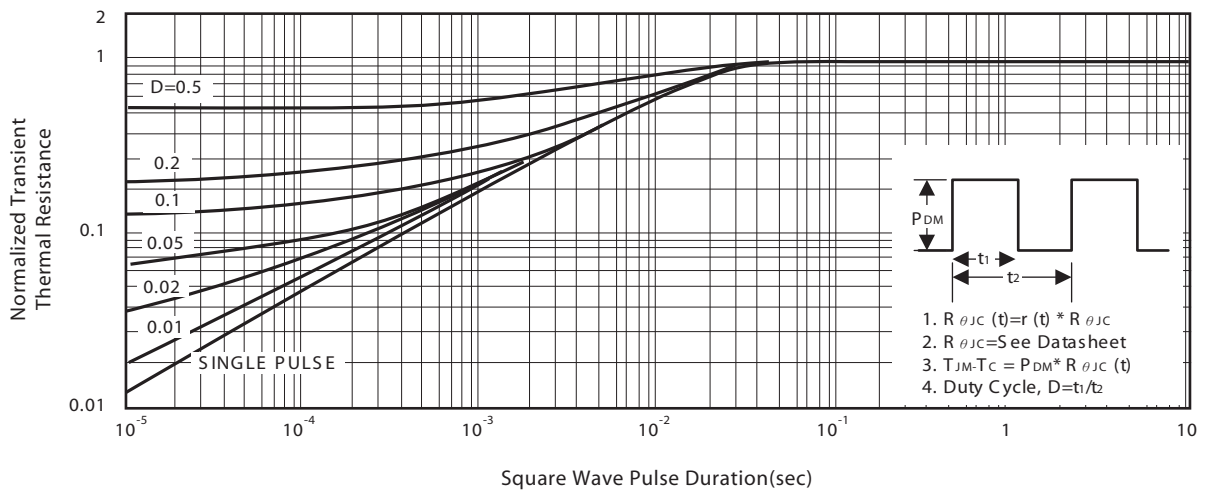
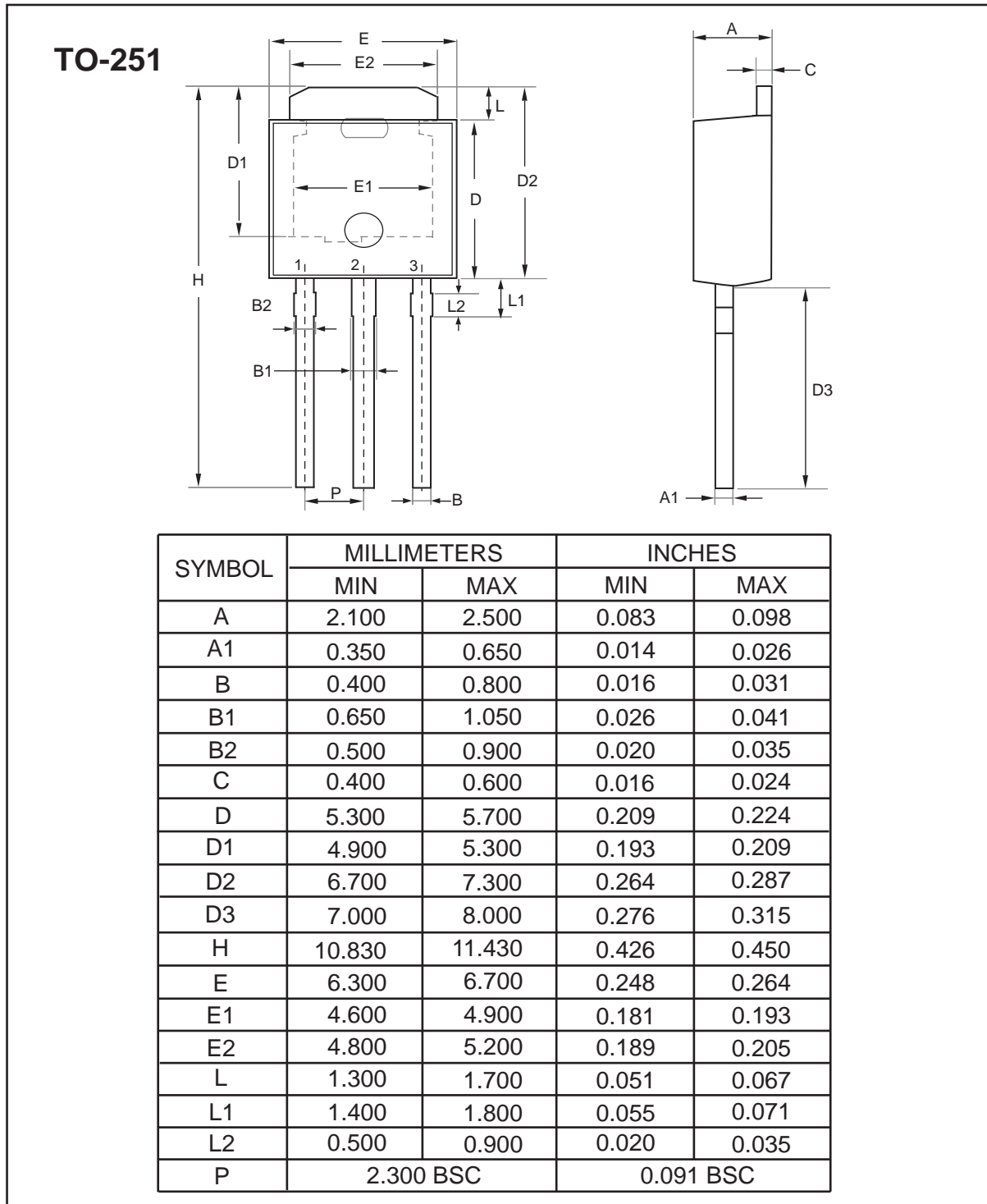


Figure 14. Normalized Thermal Transient Impedance Curve

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PACKAGE OUTLINE DIMENSIONS

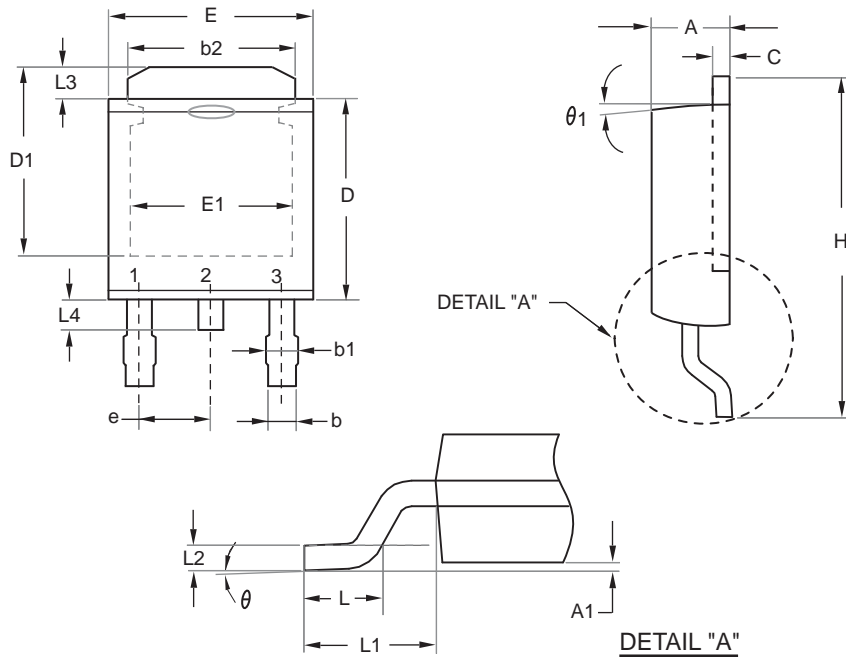


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TO-252



SYMBOLS	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	2.100	2.500	0.083	0.098
A1	0.000	0.200	0.000	0.008
b	0.400	0.889	0.016	0.035
b1	0.770	1.140	0.030	0.045
b2	4.800	5.460	0.189	0.215
C	0.400	0.600	0.016	0.024
D	5.300	6.223	0.209	0.245
D1	4.900	5.515	0.193	0.217
E	6.300	6.731	0.248	0.265
E1	4.400	5.004	0.173	0.197
e	2.290 REF		0.090 BSC	
H	8.900	10.400	0.350	0.409
L	1.397	1.770	0.055	0.070
L1	2.743 REF.		0.108 REF.	
L2	0.508 REF.		0.020 REF.	
L3	0.890	1.700	0.035	0.067
L4	0.500	1.100	0.020	0.043
theta	0°	10°	0°	10°
theta1	7° REF.		7° REF.	

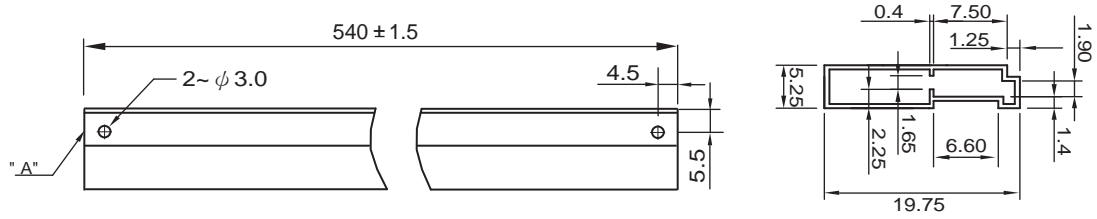
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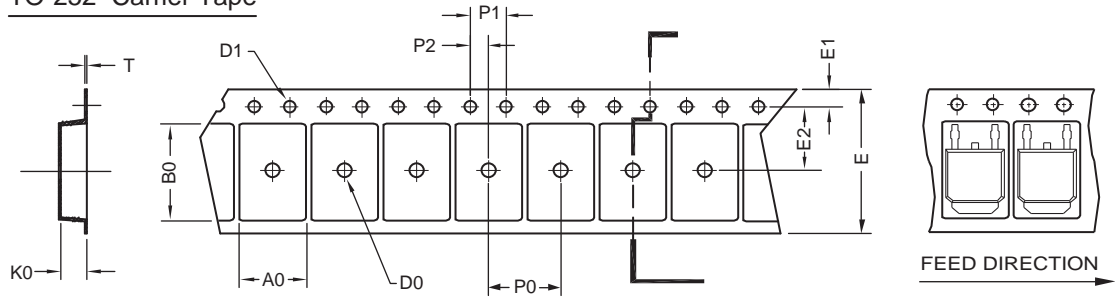
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TO-251 Tube/TO-252 Tape and Reel Data

TO-251 Tube



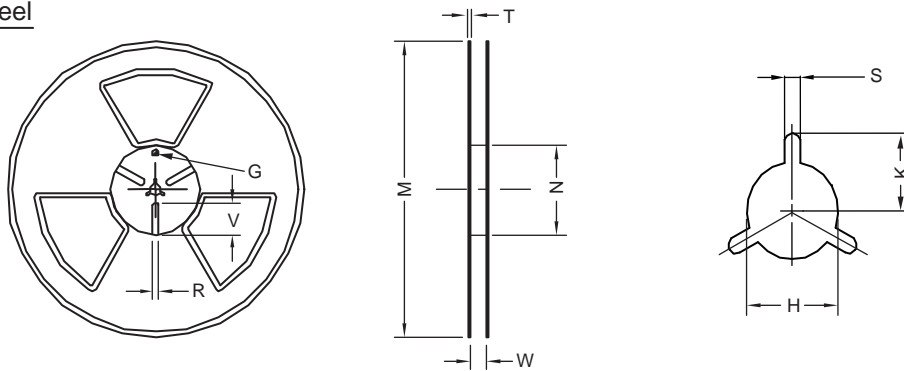
TO-252 Carrier Tape



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



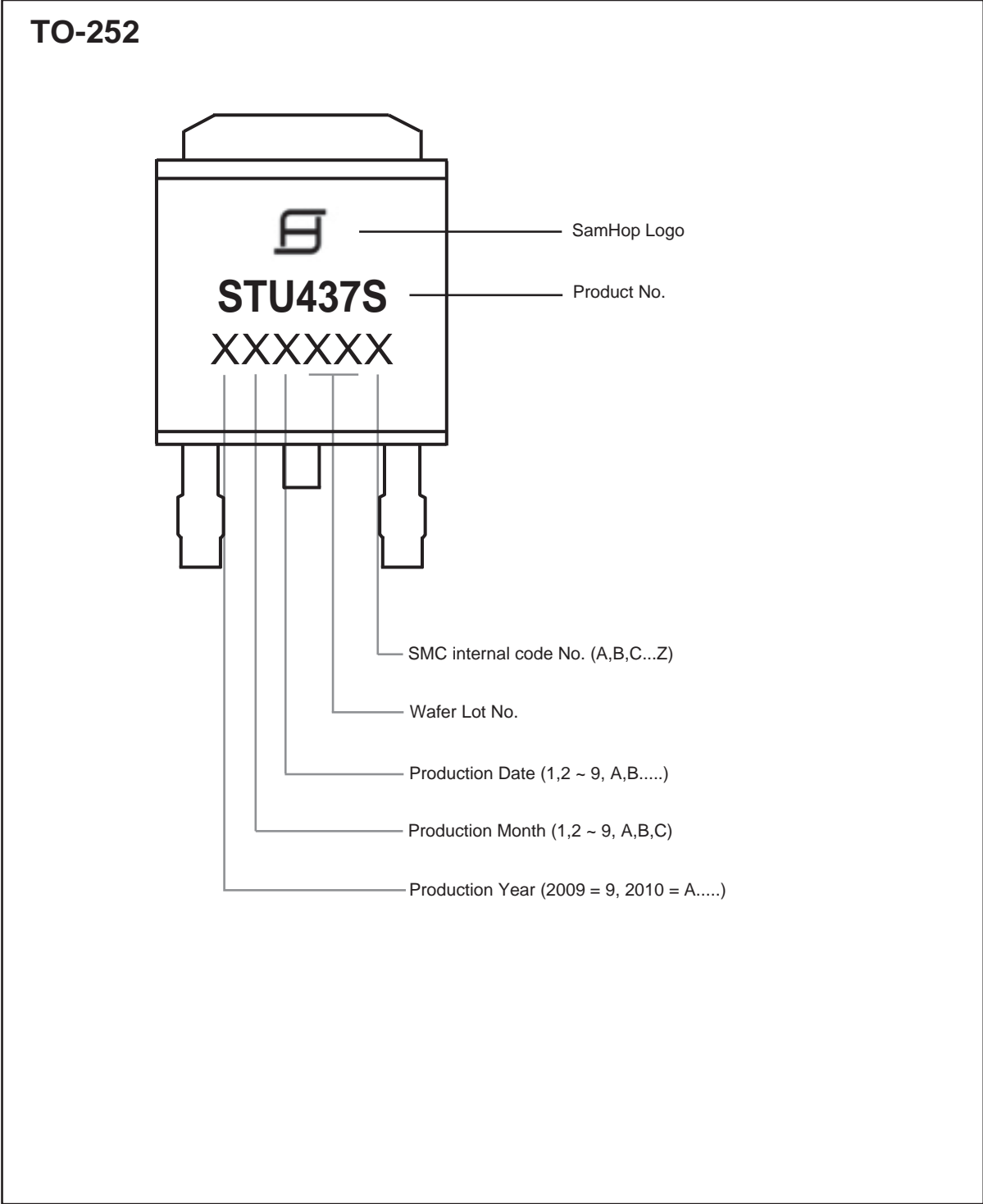
UNIT:mm

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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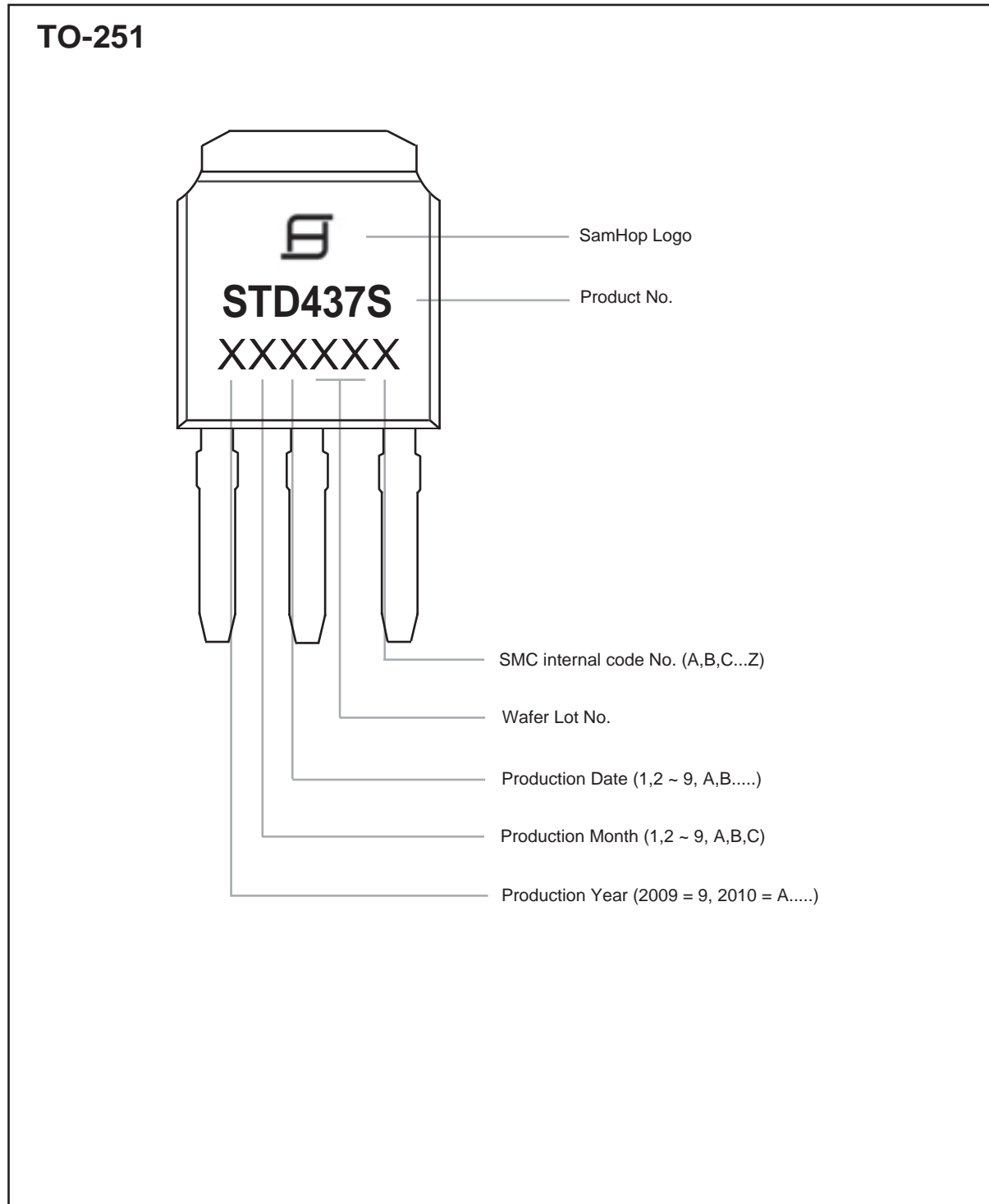
TOP MARKING DEFINITION



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