



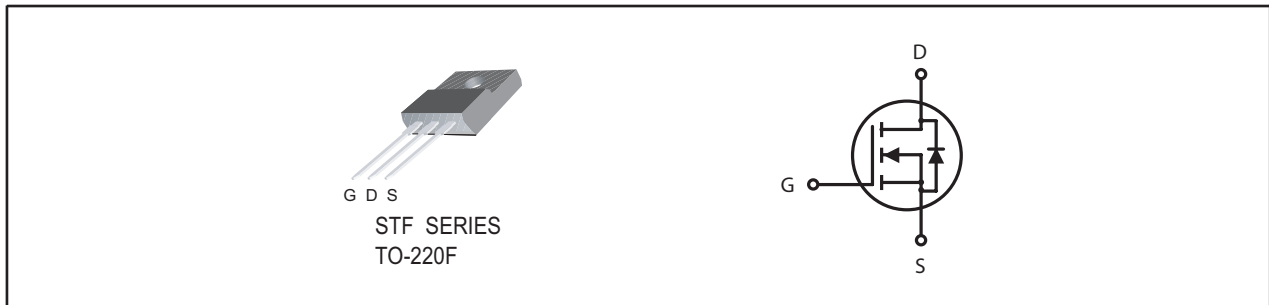
N-Channel Enhancement Mode Field Effect Transistor

PRODUCT SUMMARY

V _{DSS}	I _D	R _{DS(ON)} (mΩ) Typ
60V	32A	15 @ V _{GS} =10V

FEATURES

- Super high dense cell design for low R_{DS(ON)}.
- Rugged and reliable.
- TO-220F Package.



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

Symbol	Parameter	Limit	Units
V _{DS}	Drain-Source Voltage	60	V
V _{GS}	Gate-Source Voltage	±20	V
I _D	Drain Current-Continuous ^a	T _C =25°C	32
		T _C =70°C	26.8
I _{DM}	-Pulsed ^b	95	A
E _{AS}	Avalanche Energy ^d	144	mJ
P _D	Maximum Power Dissipation ^a	T _C =25°C	30
		T _C =70°C	21
T _J , T _{STG}	Operating Junction and Storage Temperature Range	-55 to 175	°C

THERMAL CHARACTERISTICS

R _{θ JC}	Thermal Resistance, Junction-to-Case	5	°C/W
R _{θ JA}	Thermal Resistance, Junction-to-Ambient	65	°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 =250uA	60			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =48V , 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	2.8	4	V
R _{DS(ON)}	Drain-Source On-State Resistance	V _{GS} =10V , I _D =16A		15	19	m ohm
g _{FS}	Forward Transconductance	V _{DS} =20V , I _D =16A		25		S
DYNAMIC CHARACTERISTICS ^c						
C _{ISS}	Input Capacitance	V _{DS} =25V, V _{GS} =0V f=1.0MHz		2300		pF
C _{OSS}	Output Capacitance			142		pF
C _{RSS}	Reverse Transfer Capacitance			108		pF
SWITCHING CHARACTERISTICS ^c						
t _{D(ON)}	Turn-On Delay Time	V _{DD} =30V I _D =1A		63		ns
t _r	Rise Time			71		ns
t _{D(OFF)}	Turn-Off Delay Time	V _{GS} =10V R _{GEN} = 6 ohm		162		ns
t _f	Fall Time			42		ns
Q _g	Total Gate Charge	V _{DS} =30V, I _D =25A, V _{GS} =10V		28		nC
Q _{gs}	Gate-Source Charge	V _{DS} =30V, I _D =25A, V _{GS} =10V		5		nC
Q _{gd}	Gate-Drain Charge			9.6		nC
DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS						
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _S =2A		0.78	1.3	V

Notes

- Surface Mounted on FR4 Board, t ≤ 10sec.
- Pulse Test: Pulse Width ≤ 300us, Duty Cycle ≤ 2%.
- Guaranteed by design, not subject to production testing.
- Starting T_J=25°C, L=0.5mH, V_{DD} = 30V. (See Figure 13)

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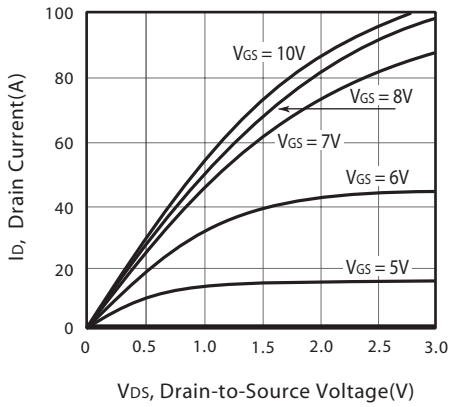


Figure 1. Output Characteristics

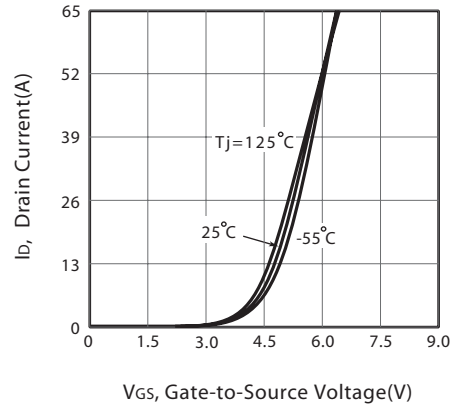


Figure 2. Transfer Characteristics

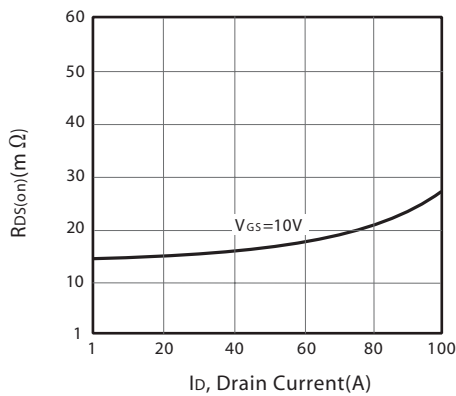


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

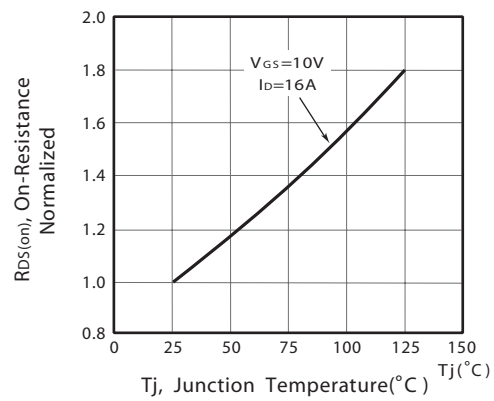


Figure 4. On-Resistance Variation with Drain Current and Temperature

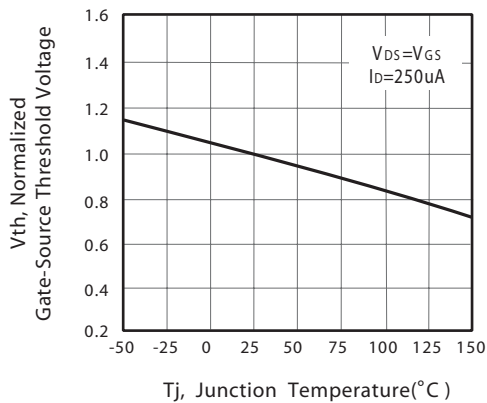


Figure 5. Gate Threshold Variation with Temperature

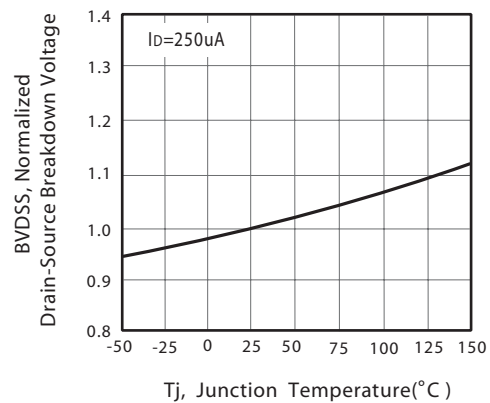


Figure 6. Breakdown Voltage Variation with Temperature

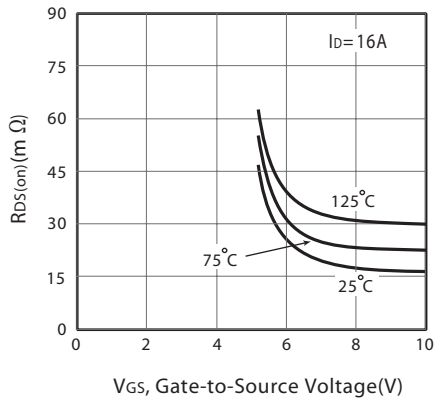


Figure 7. On-Resistance vs. Gate-Source Voltage

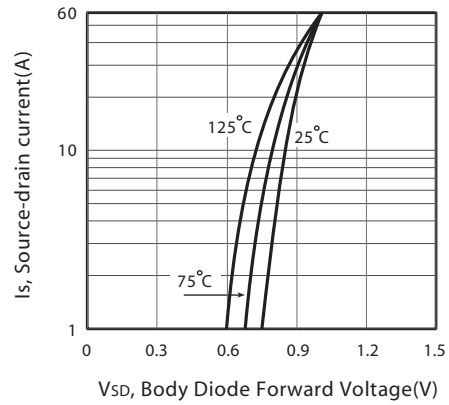


Figure 8. Body Diode Forward Voltage Variation with Source Current

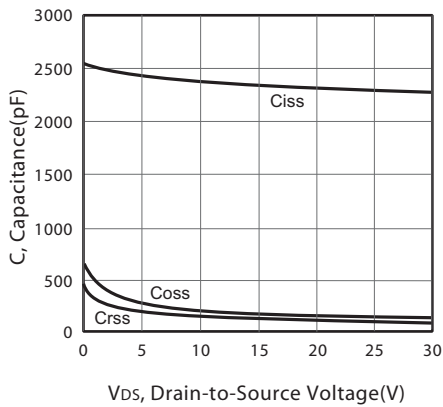


Figure 9. Capacitance

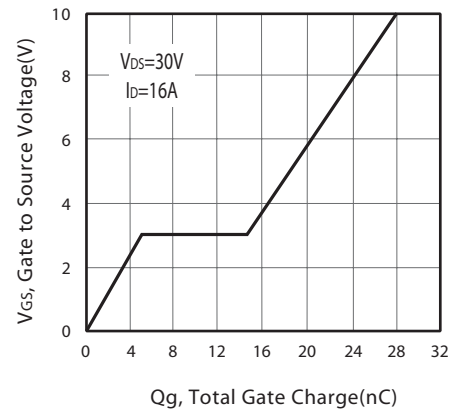


Figure 10. Gate Charge

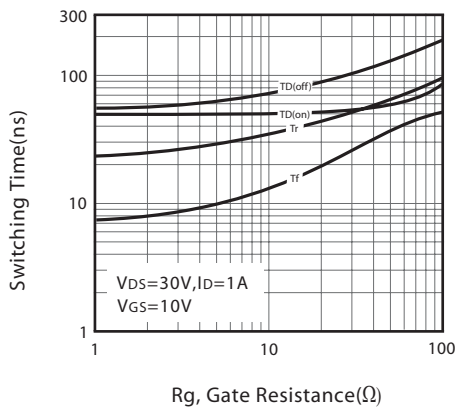


Figure 11. switching characteristics

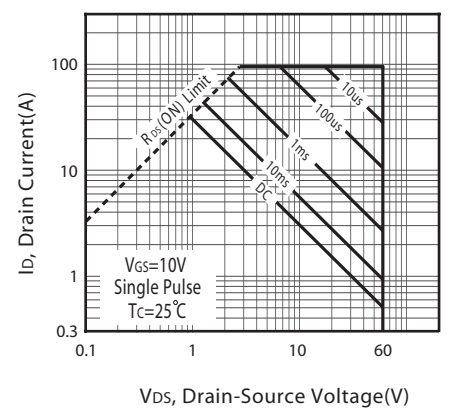
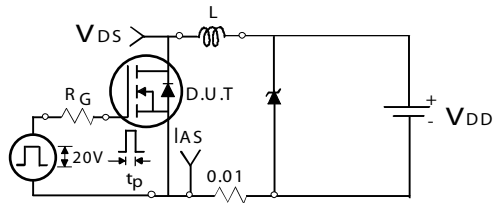


Figure 12. Maximum Safe Operating Area

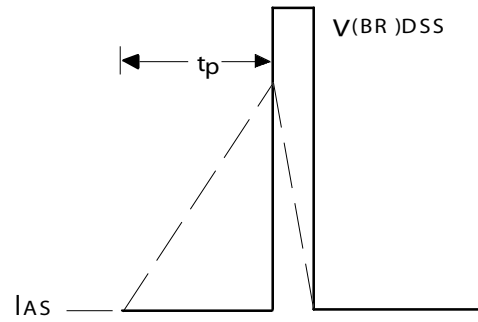
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Unclamped Inductive Test Circuit

Figure 13a.



Unclamped Inductive Waveforms

Figure 13b.

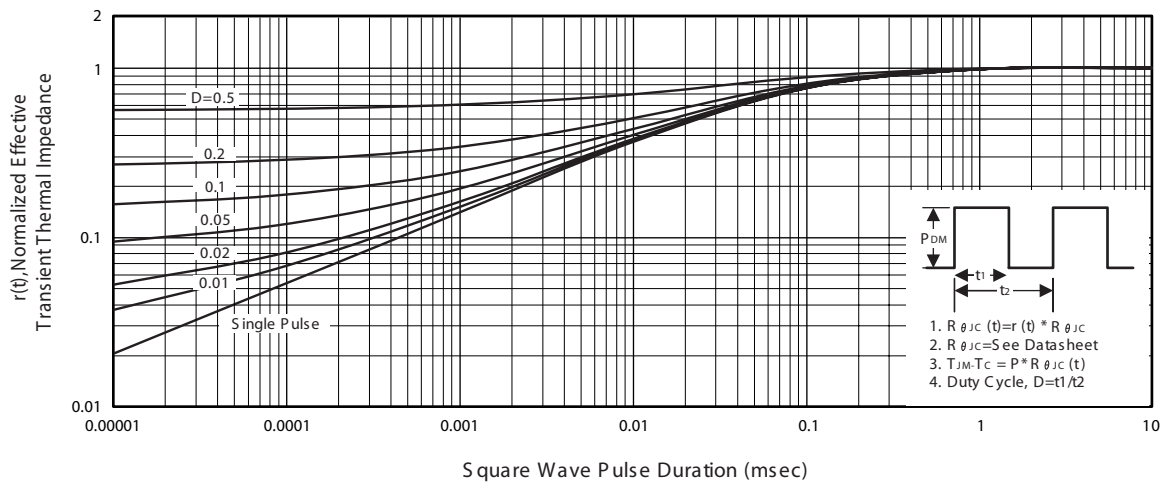


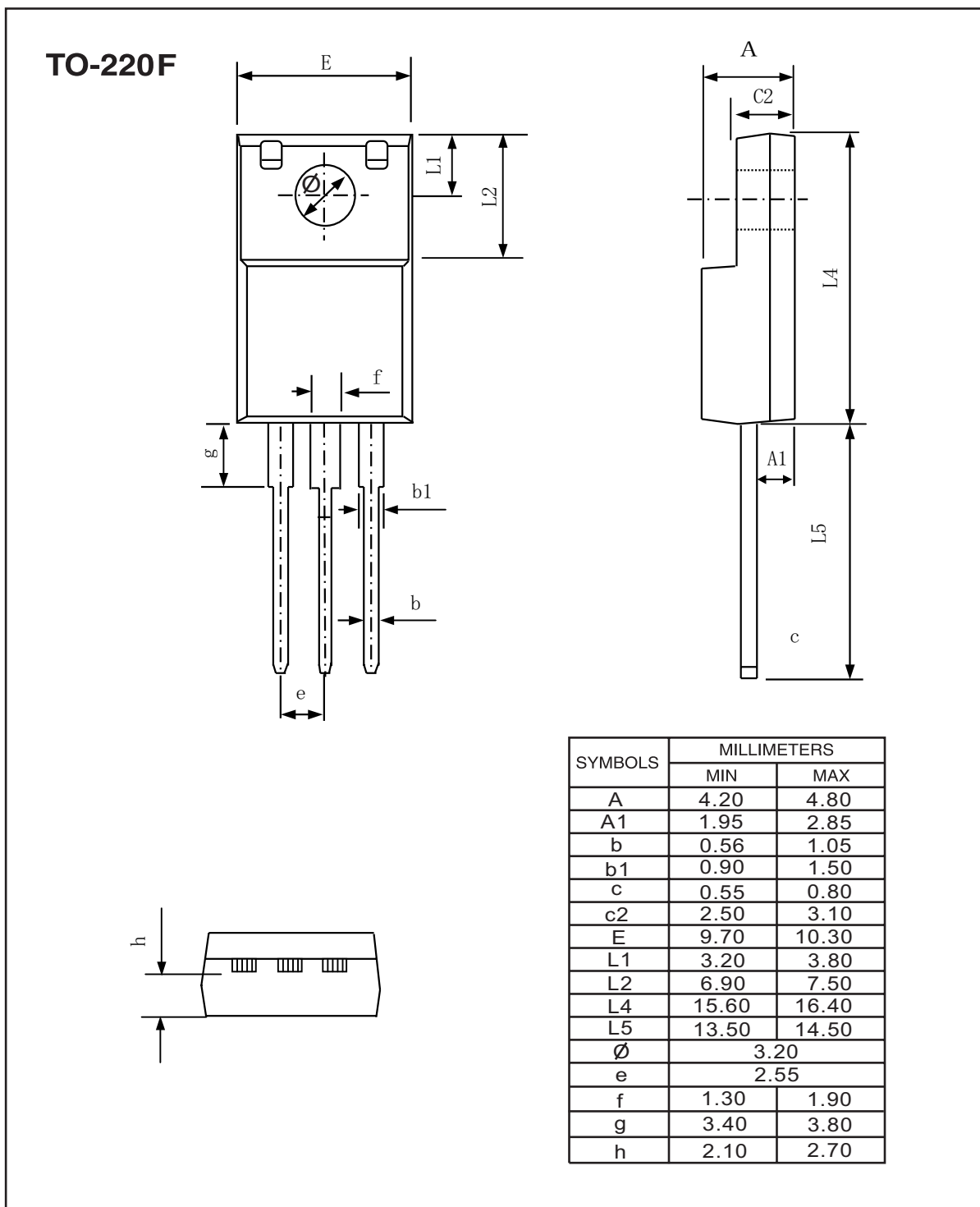
Figure 14. Normalized Thermal Transient Impedance Curve

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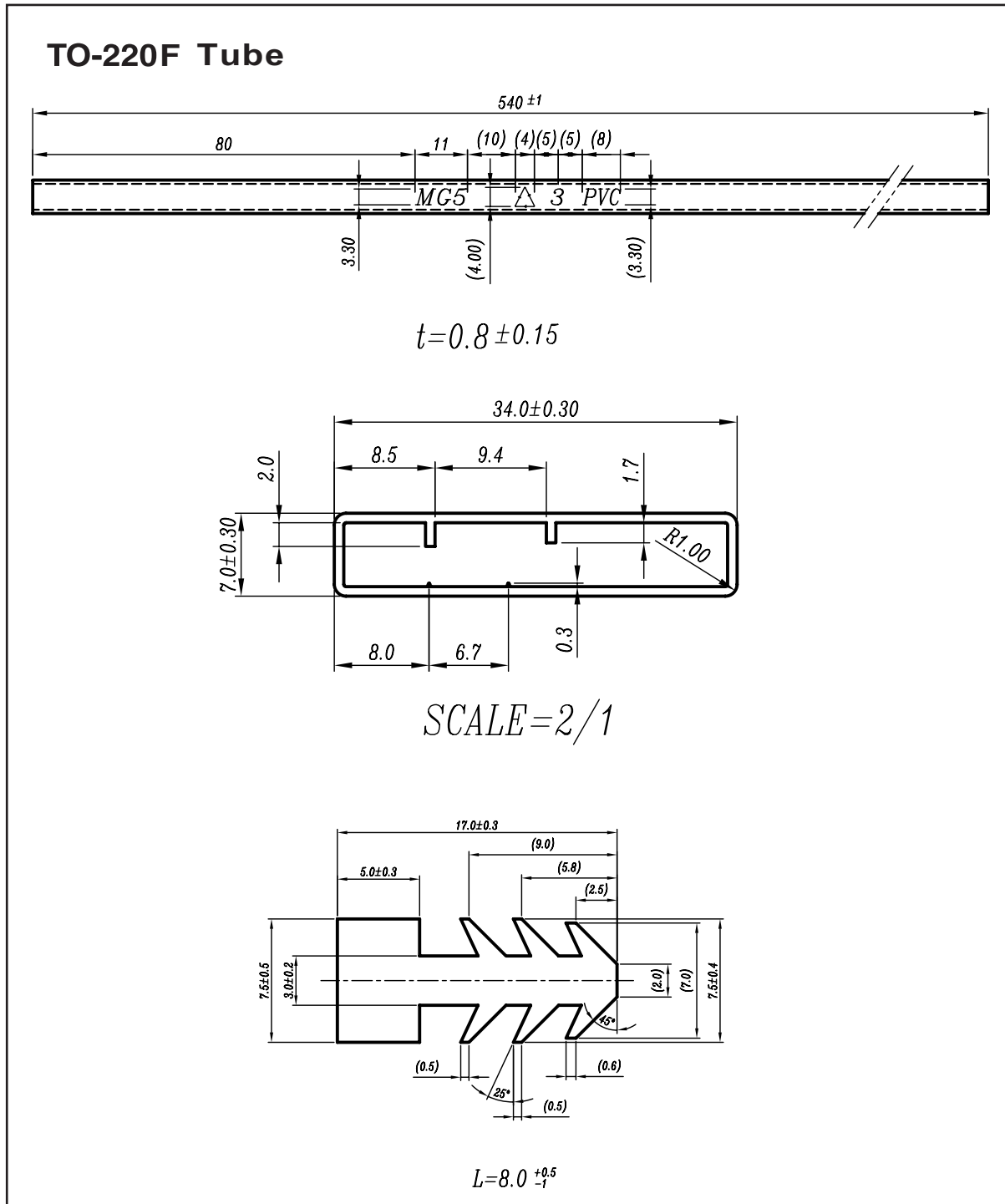
PACKAGE OUTLINE DIMENSIONS



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