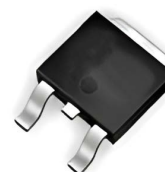
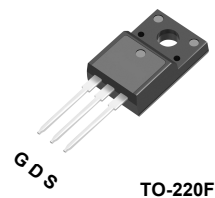


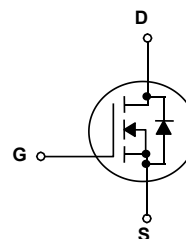
Features

- 850V@ $T_J=150^{\circ}\text{C}$
- 10A, 800V, $R_{DS(on)}=410\text{m}\Omega@V_{GS}=10\text{V}$
- Low gate charge (typ. $Q_g=17.7\text{nC}$)
- High ruggedness
- Ultra fast switching
- 100% avalanche tested
- Improved dv/dt capability



General Description

This Power MOSFET is produced using WPMtek's advanced Super-junction MOSFET technology. This advanced technology has been especially tailored to minimize on-state resistance, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode. These devices are well suited for high efficiency switched mode power supplies.



Absolute Maximum Ratings

$T_C = 25^{\circ}\text{C}$ unless otherwise noted

Symbol	Parameter	WTM10N80AF/AD	Units
V_{DSS}	Drain-Source Voltage	800	V
I_D	Drain Current * - Continuous ($T_C = 25^{\circ}\text{C}$) - Continuous ($T_C = 100^{\circ}\text{C}$)	10	A
		6.3	A
I_{DM}	Drain Current * - Pulsed (Note 1)	30	A
V_{GSS}	Gate-Source Voltage	± 30	V
E_{AS}	Single Pulsed Avalanche Energy (Note 2)	125	mJ
P_D	Power Dissipation ($T_C = 25^{\circ}\text{C}$) - Derate above 25°C	48	W
		0.38	W/ $^{\circ}\text{C}$
T_J, T_{STG}	Operating and Storage Temperature Range	-55 to +150	$^{\circ}\text{C}$
T_L	Maximum lead temperature for soldering purposes, 1/8" from case for 5 seconds	260	$^{\circ}\text{C}$

* Drain current limited by maximum junction temperature.

Thermal Characteristics

Symbol	Parameter	WTM10N80AF/AD	Units
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case	2.6	$^{\circ}\text{C/W}$
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	62.5	$^{\circ}\text{C/W}$

Electrical Characteristics

$T_C = 25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
--------	-----------	-----------------	-----	-----	-----	-------

Off Characteristics

BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS} = 0\text{ V}, I_D = 250\text{ }\mu\text{A}$	800	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = 800\text{ V}, V_{GS} = 0\text{ V}$	--	--	1	μA
I_{GSSF}	Gate-Body Leakage Current, Forward	$V_{GS} = 30\text{ V}, V_{DS} = 0\text{ V}$	--	--	100	nA
I_{GSSR}	Gate-Body Leakage Current, Reverse	$V_{GS} = -30\text{ V}, V_{DS} = 0\text{ V}$	-100	--	--	nA

On Characteristics

$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\text{ }\mu\text{A}$	2.5	--	4.5	V
$R_{DS(on)}$	Static Drain-Source On-Resistance	$V_{GS} = 10\text{ V}, I_D = 5\text{ A}$	--	410	500	m Ω

Dynamic Characteristics

C_{iss}	Input Capacitance	$V_{DS} = 100\text{ V}, V_{GS} = 0\text{ V},$ $f = 100\text{ KHz}$	--	1030	--	pF
C_{oss}	Output Capacitance		--	31	--	pF
C_{rss}	Reverse Transfer Capacitance		--	0.6	--	pF

Switching Characteristics

$t_{d(on)}$	Turn-On Delay Time	$V_{DS} = 400\text{ V}, I_D = 10\text{ A},$ $R_G = 4.7\text{ }\Omega, V_{GS} = 10\text{ V}$ (Note3)	--	46	--	ns
t_r	Turn-On Rise Time		--	34	--	ns
$t_{d(off)}$	Turn-Off Delay Time		--	61	--	ns
t_f	Turn-Off Fall Time		--	20	--	ns
Q_g	Total Gate Charge	$V_{DS} = 400\text{ V}, I_D = 10\text{ A},$ $V_{GS} = 10\text{ V}$ (Note3)	--	24.2	--	nC
Q_{gs}	Gate-Source Charge		--	6.8	--	nC
Q_{gd}	Gate-Drain Charge		--	10.8	--	nC
R_G	Gate Resistance	$f = 1\text{ MHz}$	--	4.0	--	Ω

Drain-Source Diode Characteristics and Maximum Ratings

I _S	Maximum Continuous Drain-Source Diode Forward Current		--	--	10	A
I _{SM}	Maximum Pulsed Drain-Source Diode Forward Current		--	--	30	A
V _{SD}	Drain-Source Diode Forward Voltage	V _{GS} = 0 V, I _S = 6A	--	--	1.4	V
t _{rr}	Reverse Recovery Time	V _{DS} =400 V, I _S = 10A, dI _F / dt = 120A/us	--	288	--	ns
Q _{rr}	Reverse Recovery Charge		--	3.9	--	uC

Notes:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
2. EAS condition: $T_J = 25^\circ\text{C}, V_{DD} = 50\text{ V}, V_G = 10\text{ V}, L = 10\text{ mH},$
3. Pulse Test: Pulse Width $\leq 300\text{ }\mu\text{s}$, Duty Cycles $\leq 0.5\%$

Typical Characteristics

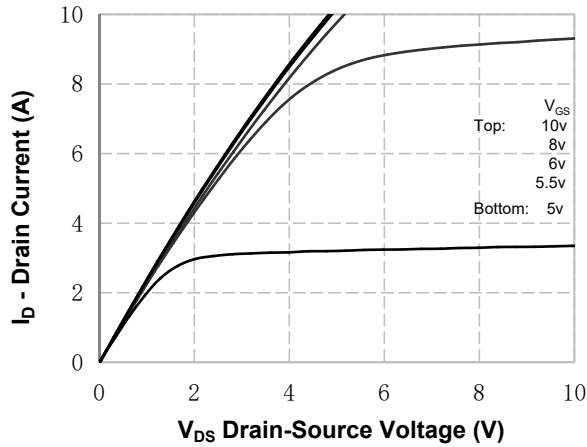


Figure 1. On-Region Characteristics

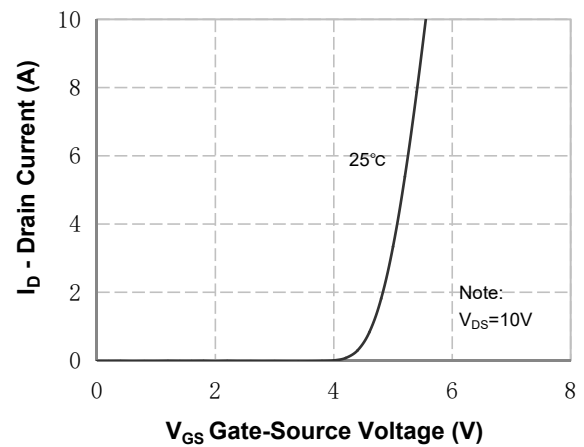


Figure 2. Transfer Characteristics

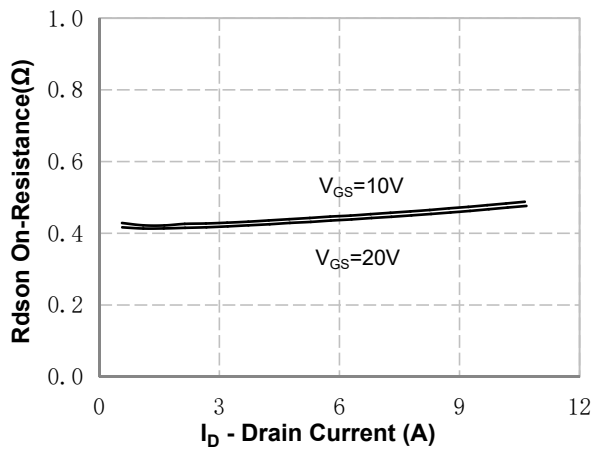


Figure 3. On-Resistance Variation vs Drain Current and Gate Voltage

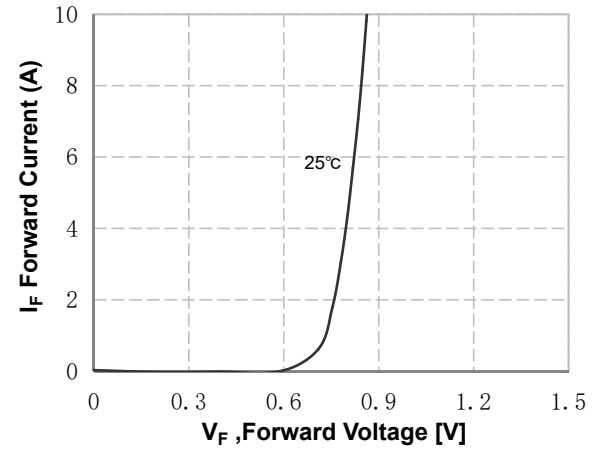


Figure 4. Body Diode Forward Voltage Variation with Source Current

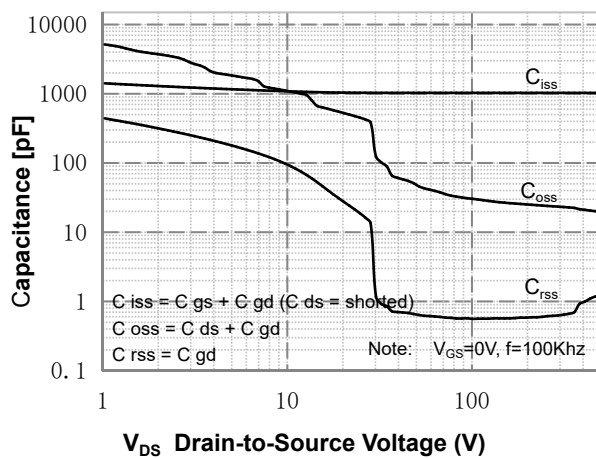


Figure 5. Capacitance Characteristics

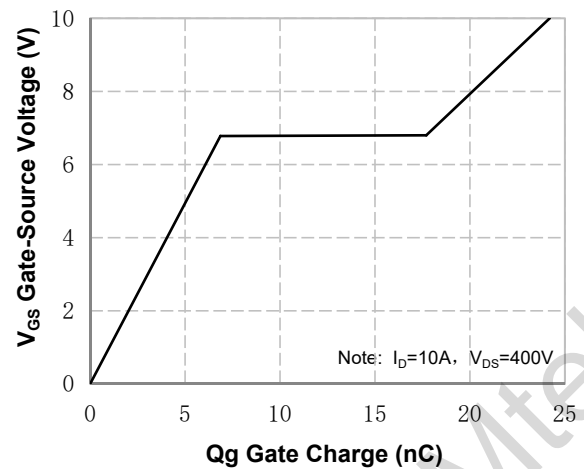


Figure 6. Gate Charge Characteristics

Typical Characteristics (Continued)

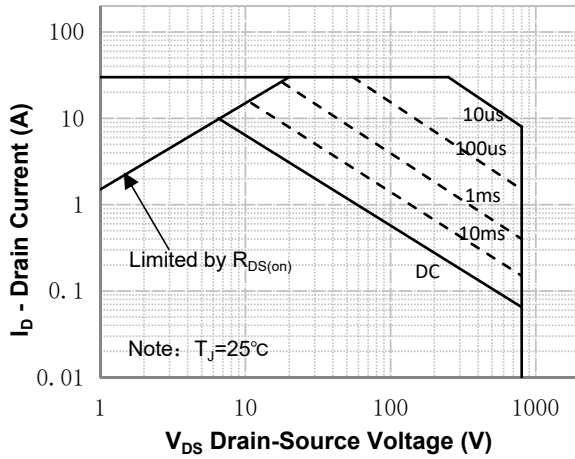


Figure 7. Maximum Safe Operating Area

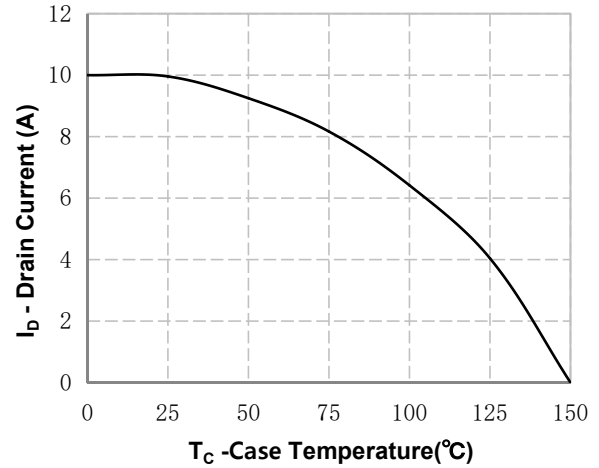


Figure 8. Maximum Drain Current vs Case Temperature

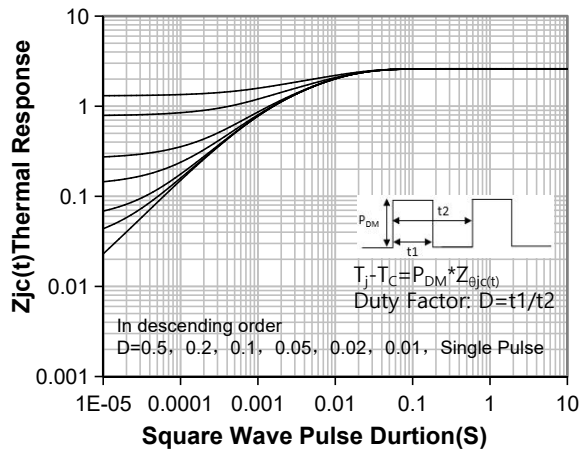
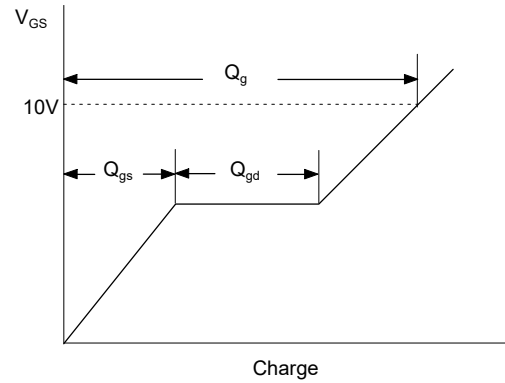
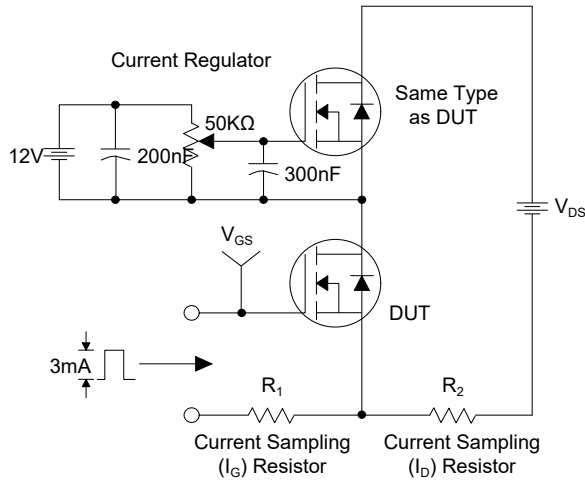
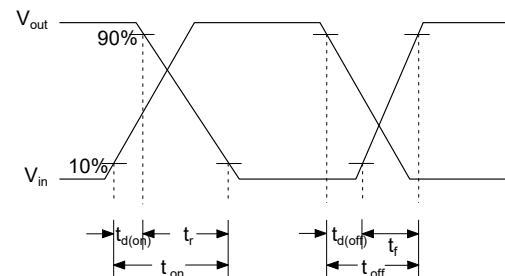
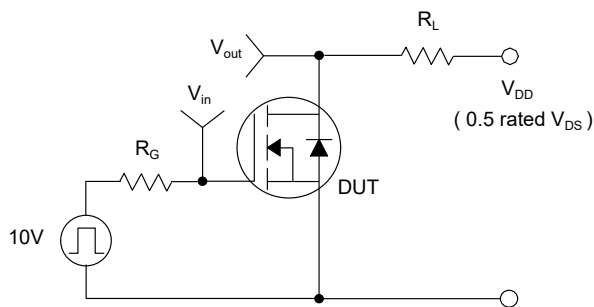


Figure 9. Transient Thermal Response Curve

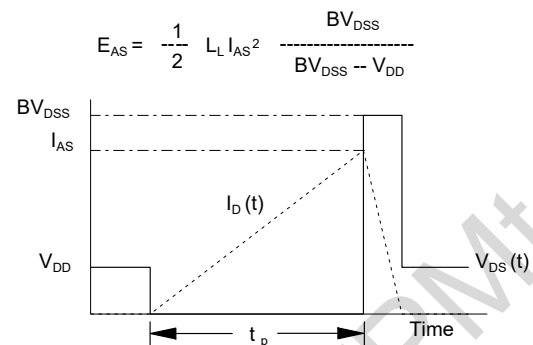
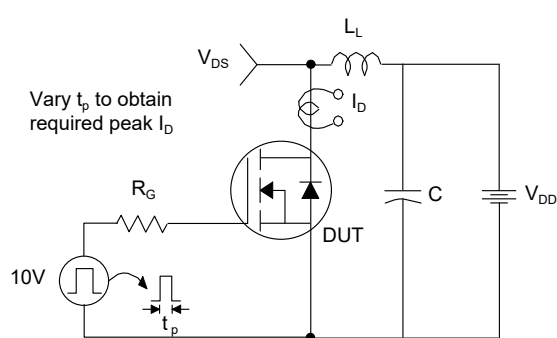
Gate Charge Test Circuit & Waveform

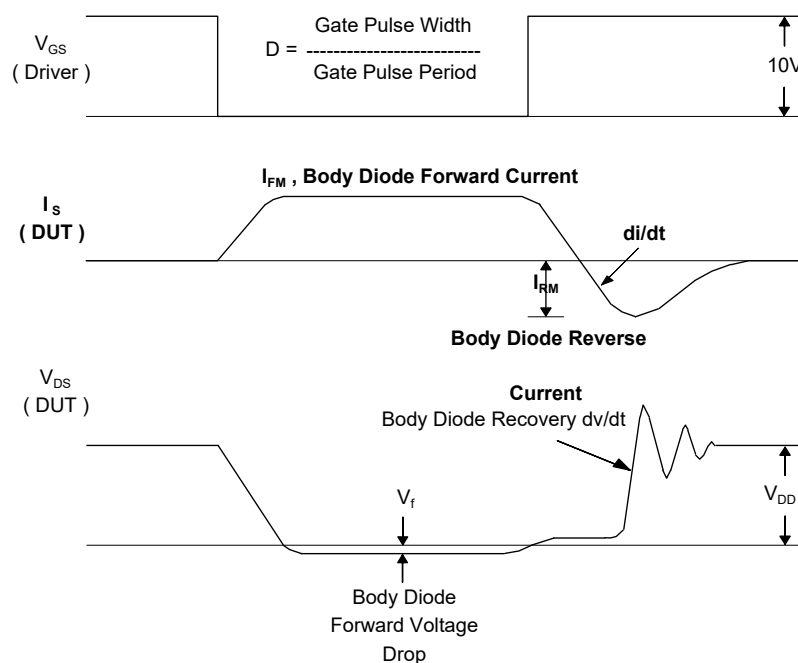


Resistive Switching Test Circuit & Waveforms

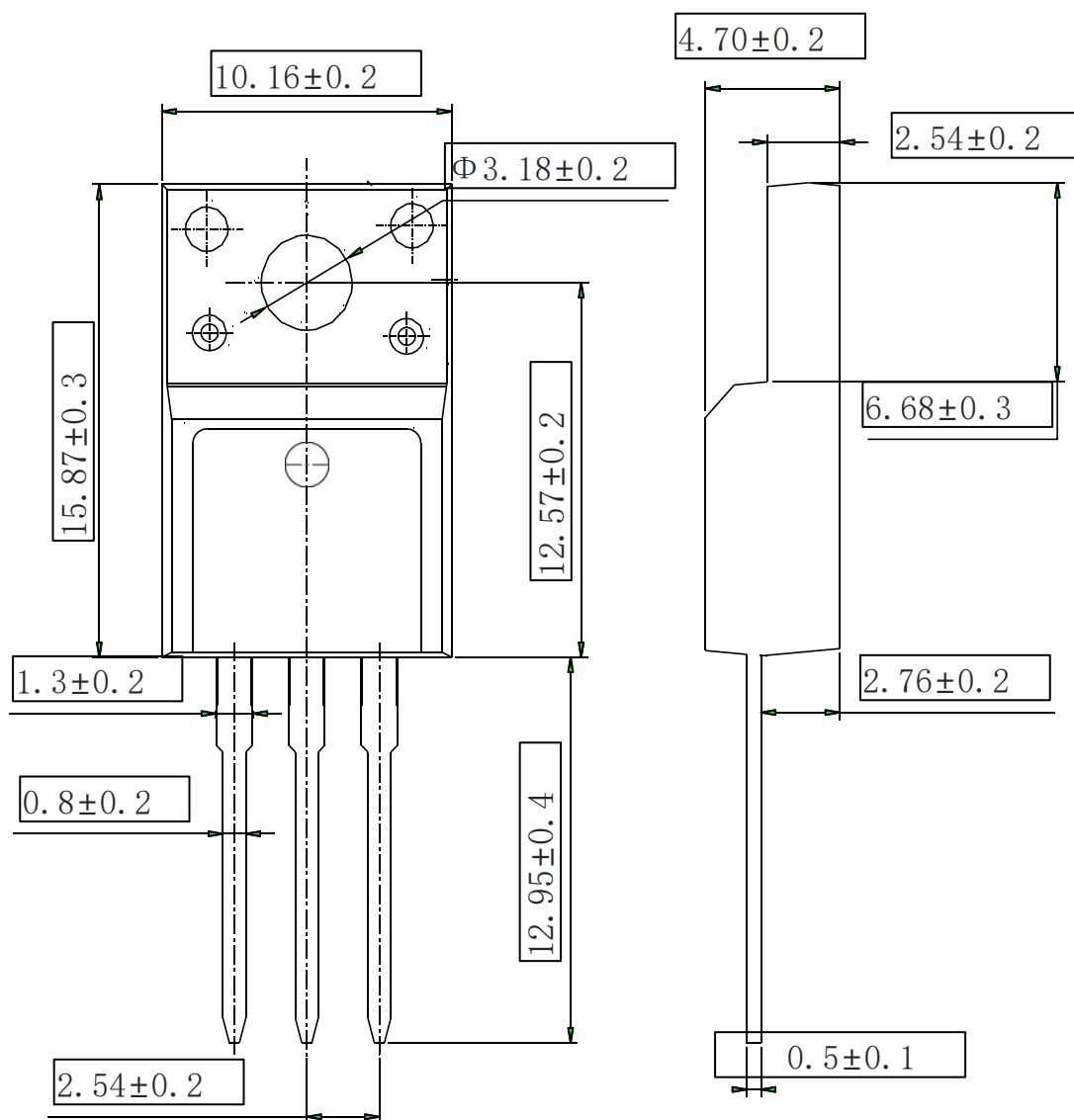


Unclamped Inductive Switching Test Circuit & Waveforms



[illegible]

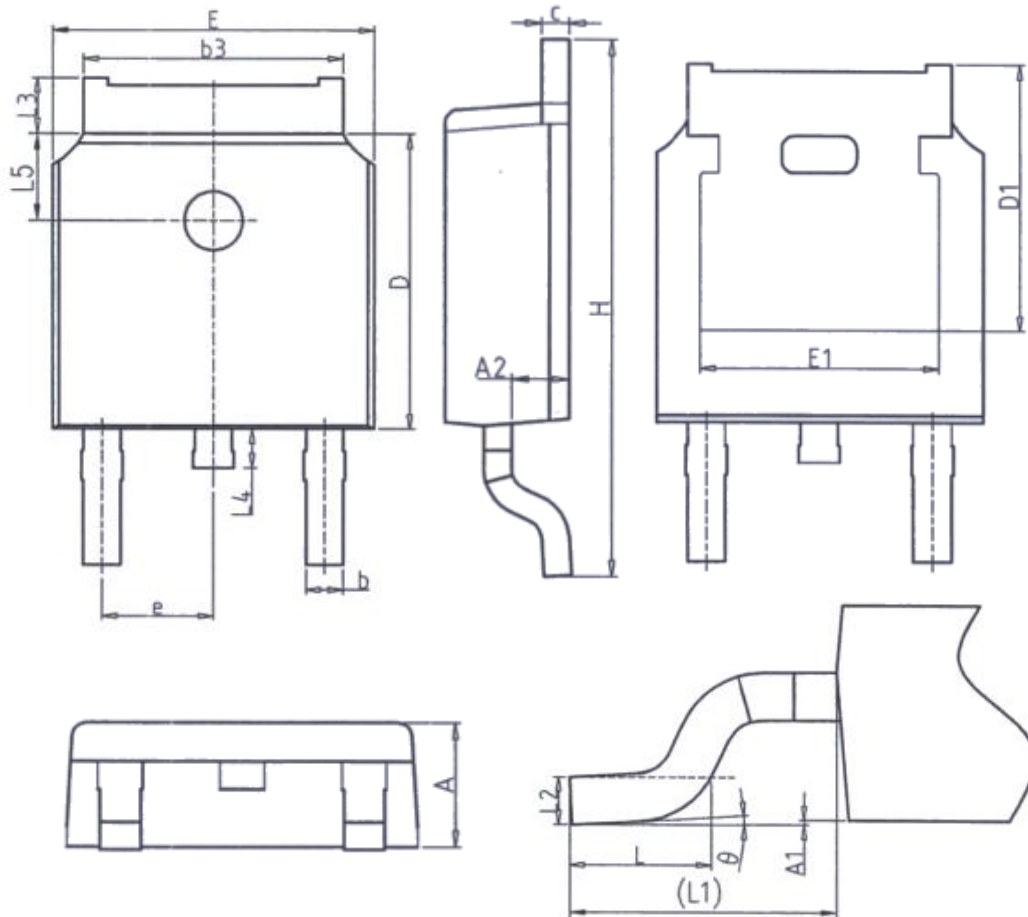
TO-220F OUTLINE



NOTE:

- 1The plastic package is not marked as smooth surface $R_a=0.1$; Subglossy surface $R_a=0.8$
- 2.Undeclared tolerance ± 0.15 , Unmarked fillet $R_{max}=0.25$

TO-252 OUTLINE



Unit: mm		
Symbol	Min.	Max.
A	2.20	2.40
A1	0.00	0.20
A2	0.97	1.17
b	0.68	0.90
b3	5.20	5.50
c	0.43	0.63
D	5.98	6.22
D1	5.30REF	
E	6.40	6.80
E1	4.63	-

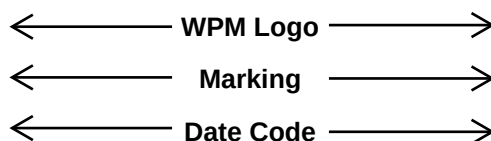
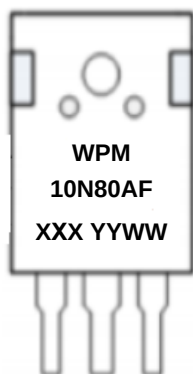
Unit: mm		
Symbol	Min.	Max.
e	2.286BSC	
H	9.40	10.50
L	1.38	1.75
L1	2.90REF	
L2	0.51BSC	
L3	0.88	1.28
L4	-	1.00
L5	1.65	1.95
θ	0°	8°

Package Marking

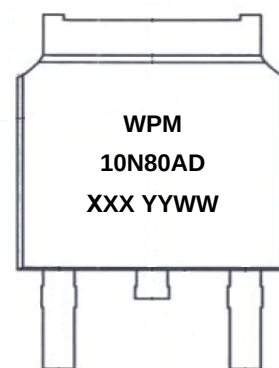
Part Number	Top Marking	Package	Packing Method	MOQ	QTY
WTM10N80AF	10N80AF	TO-220F	Tube	1000	5000
WTM10N80AD	10N80AD	TO-252	Tube	1000	5000

Marking Information

TO-220F



TO-252



WPMtek reserves the right to make changes to the product specification and data in this document without notice. WPMtek makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does WPMtek assume any liability arising from the application or use of any products or circuits, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. Any enquiry, please write to sales@wpmtek.com for further information.