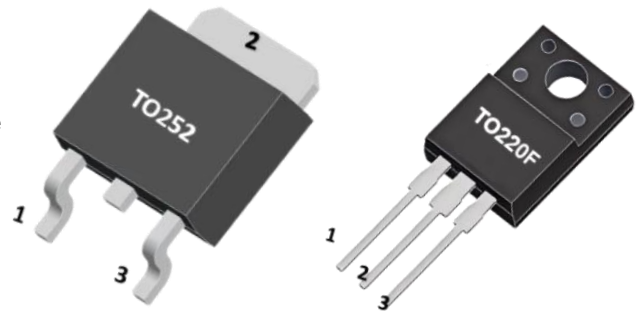


DESCRIPTION

The WTM80N06VD/F is a N-channel enhancement mode power MOSFET using our advanced technology to provide customers with a minimum on-state resistance and high switching speed. It can also withstand high energy pulse in the avalanche and commutation mode.

The WTM80N06VD/F is suitable for active power factor correction, high efficient switched mode power supplies and electronic lamp ballast based on half bridge topology, etc.



FEATURE

- * $R_{DS(ON)} \leq 8.5m\Omega$ @ $V_{GS}=10V$, $I_D=40A$
- * High switching speed
- * Improved dv/dt capability

MARKING



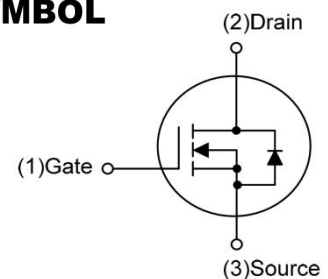
WPM : LOGO

80N06VD =Device Code (TO-252)

80N06VF =Device Code (TO-220F)

XXX YYWW =Date Code

SYMBOL



ABSOLUTE MAXIMUM RATINGS($T_A=25^\circ C$, unless otherwise specified.)

SYMBOL	PARAMETER		VALUE	UNIT
V_{DS}	Drain-Source Voltage		60	V
V_{GS}	Gate Source Voltage		± 20	V
I_D	Continuous Drain Current		80	A
I_{DM}	Pulsed Drain Current (Note 3)		160	A
E_{AS}	Single Pulsed Avalanche Energy(Note 4)		55	mJ
dv/dt	Peak Diode Recovery dv/dt (Note 5)		3.2	V/nS
PD	Power Dissipation	TO-252	48	W
		TO-220F	80	
T_J	Storage Temperature		150	$^\circ C$
T_{STG}	Thermal Resistance Fr .00m Junction To Ambient		-55~150	$^\circ C$
θ_{JA}	Junction to Ambient	TO-252	110	$^\circ C/W$
		TO-220F	75	
θ_{JC}	Junction to Case(Note 6)	TO-252	2.2	$^\circ C/W$
		TO-220F	1.88	

Notes: Absolute maximum ratings are those values beyond which the device could be permanently damaged.

Absolute maximum ratings are stress ratings only and functional device operation is not implied.

2. Drain current limited by maximum junction temperature.

3. Repetitive Rating: Pulse width limited by maximum junction temperature.
4. $L = 0.5\text{mH}$, $I_{AS} = 15\text{A}$, $V_{DD} = 20\text{V}$, $R_G = 25\Omega$, Starting $T_J = 25^\circ\text{C}$.
5. $I_{SD} \leq 30\text{A}$, $di/dt \leq 200\text{A}/\mu\text{s}$, $V_{DD} \leq BV_{DSS}$, Starting $T_J = 25^\circ\text{C}$.
6. Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper plate.

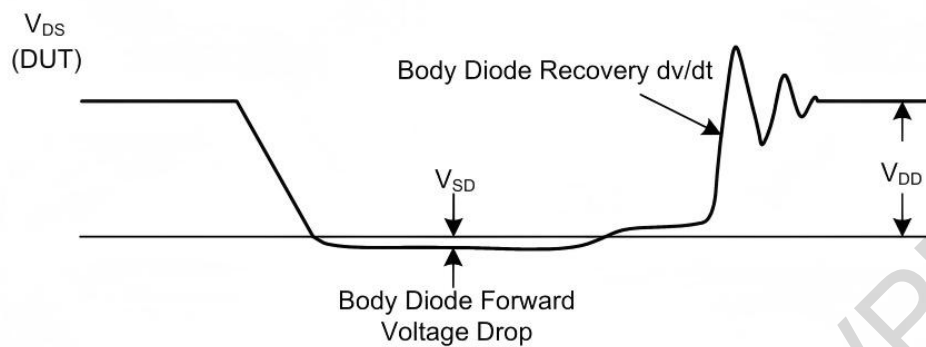
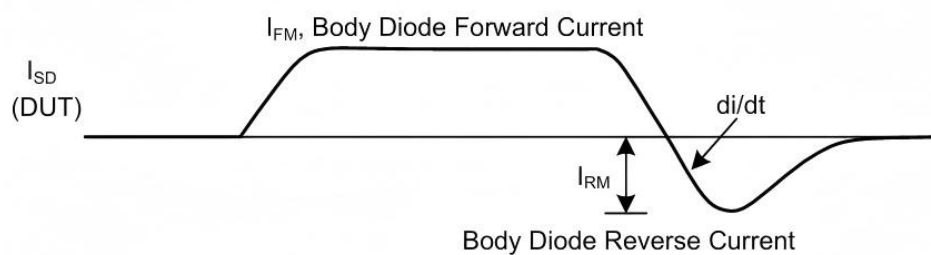
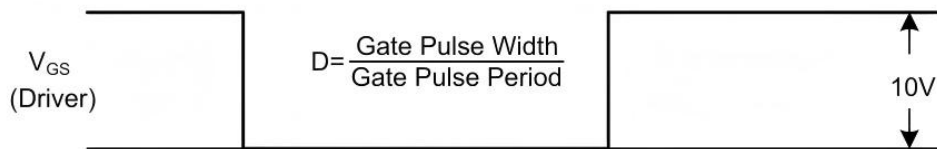
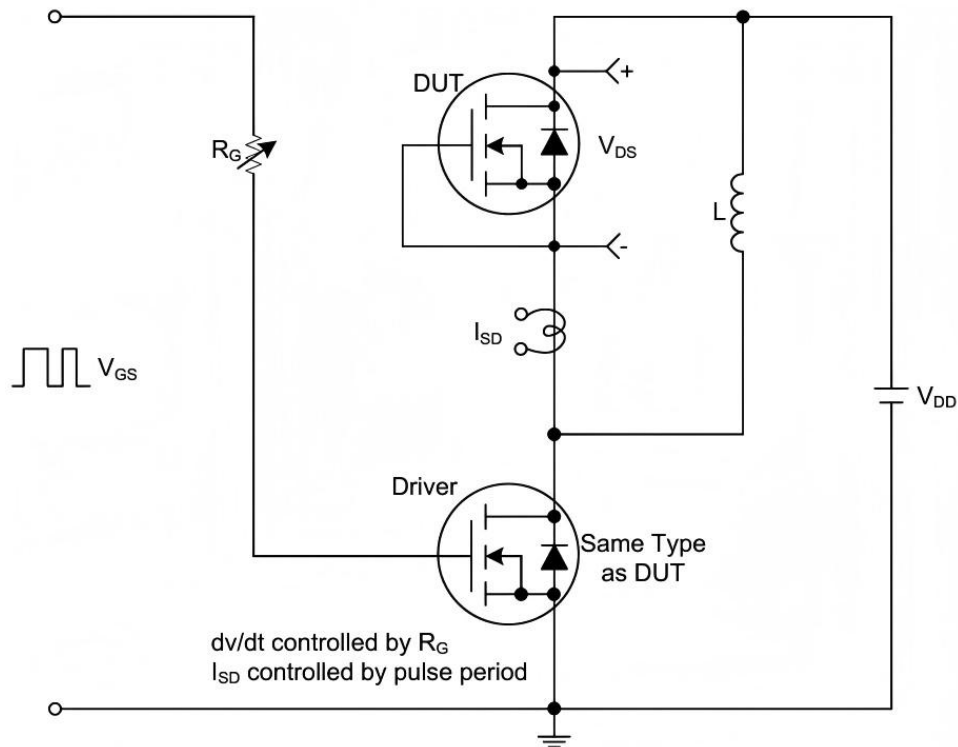
ELECTRICAL CHARACTERISTICS ($T_A=25^\circ\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250μA	60			V
Zero gate voltage drain current	I _{DSS}	V _{DS} =60V, V _{GS} =0V			1	μA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V			±100	nA
ON CHARACTERISTICS						
Static drain-source on-sate resistance	R _{DS(ON)}	V _{GS} =10V, I _D =40A		7.5	8.5	mΩ
Gate Threshold Voltage	V _{GS(TH)}	V _{GS} =V _{DS} ,I _D =250μA	1.0		3.0	V
DYNAMIC PARAMETERS						
Input Capacitance	C _{ISS}	V _{GS} =0V,V _{DS} =25V f=1.0MHz		4000		pF
Output Capacitance	C _{OSS}			280		pF
Reverse Transfer Capacitance	C _{RSS}			240		pF
SWITCHING PARAMETERS						
Total gate charge	Q _g	V _{DS} =48V,V _{GS} =10V I _D =80A,I _G =1mA (Note 1.2)		130		nC
Gate-source charge	Q _{gs}			19		
Gate-drain charge	Q _{gd}			36		
Turn-On Delay Time	t _{d(on)}	V _{DS} =30V,I _D =80A V _{GS} =10V, R _G =3.3Ω (Note 1.2)		17		nS
Turn-On Rise time	t _r			20		
Turn-Off Delay Time	t _{d(off)}			75		
Turn-Off Fall time	t _f			30		
DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS						
Continuous drain-source diode forward current (Note 1)	I _S				80	A
Pulsed drain-source diode forward current (Note 2)	I _{SM}				160	A
Drain-source diode forward voltage(Note 4)	V _{SD}	I _S =24A,V _{GS} =0V			1.4	V
Reverse Recovery Time	t _{rr}	I _S =30A, V _{GS} =0V		52		nS
Reverse Recovery Charge	Q _{rr}	dI/dt=100A/μs		152		nC

Notes:

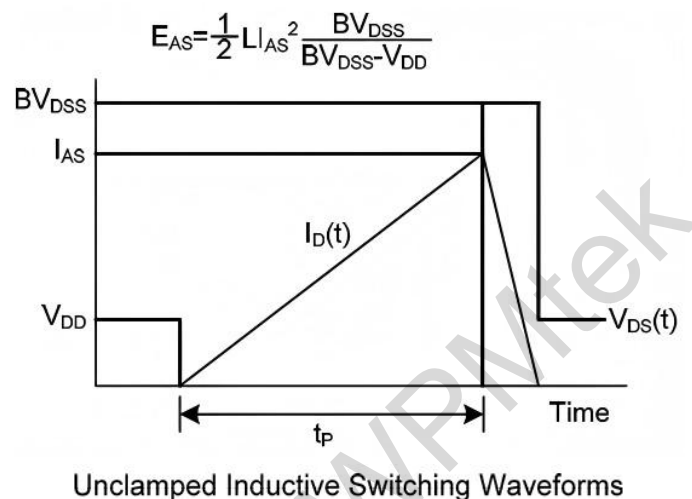
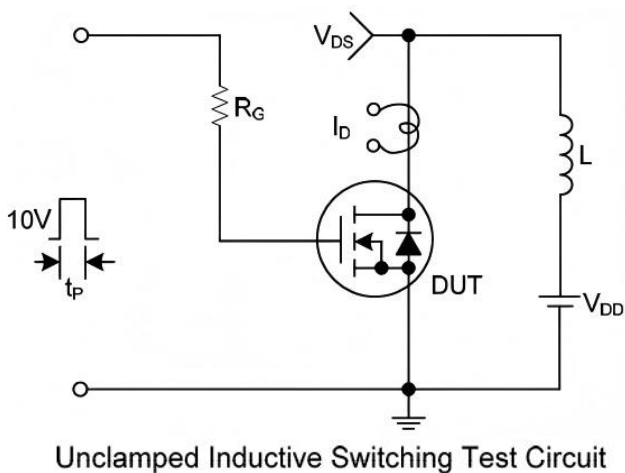
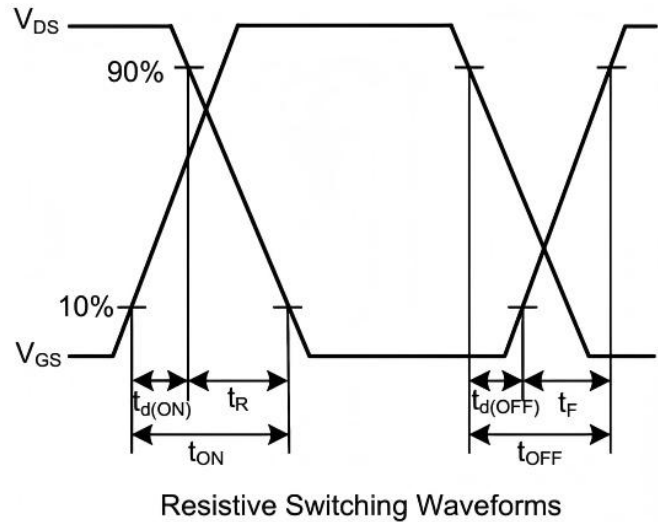
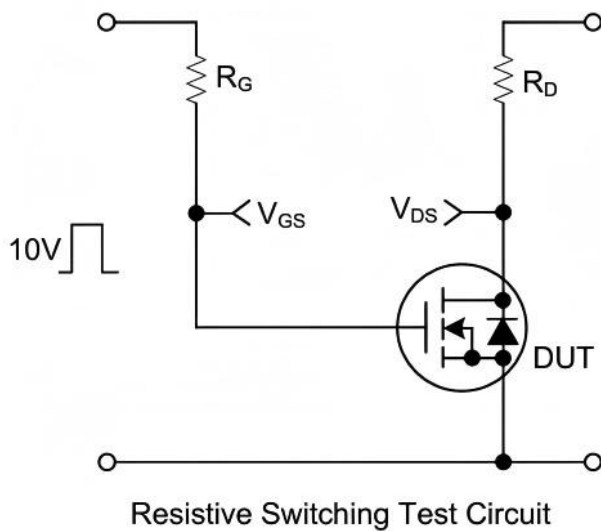
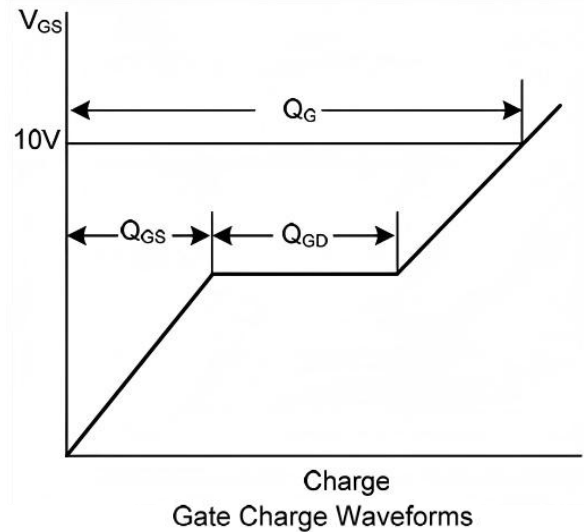
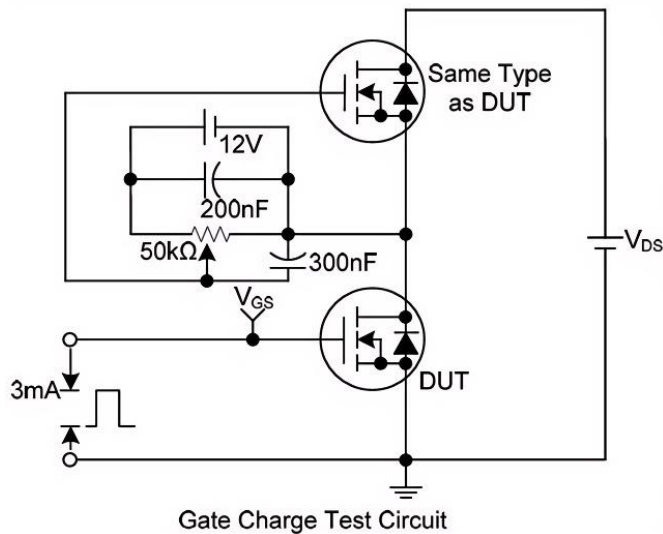
1. Pulse Test : Pulse Width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.
2. Essentially independent of operating temperature typical characteristics.

TEST CIRCUITS AND WAVEFORMS

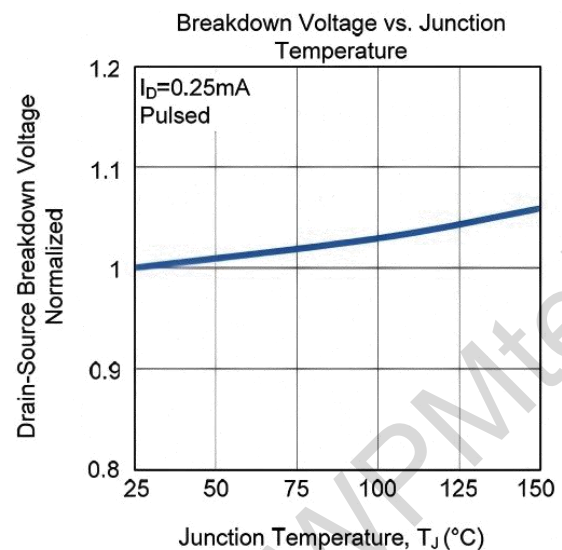
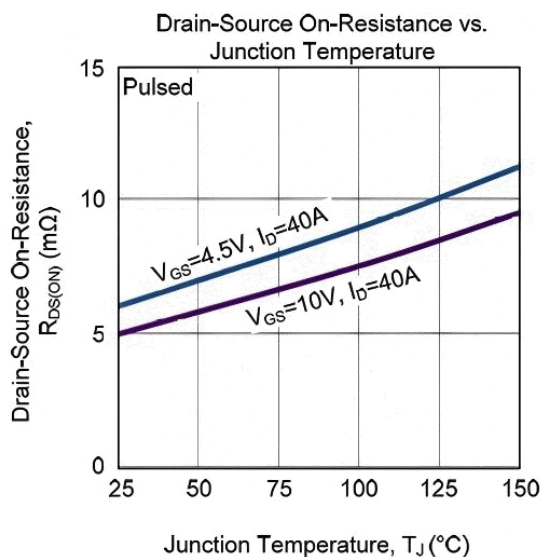
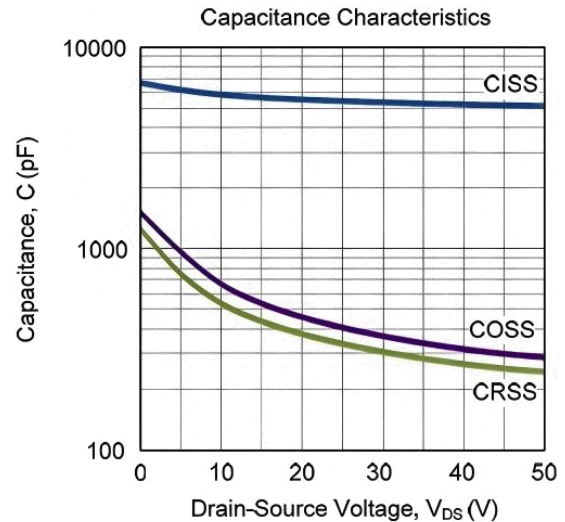
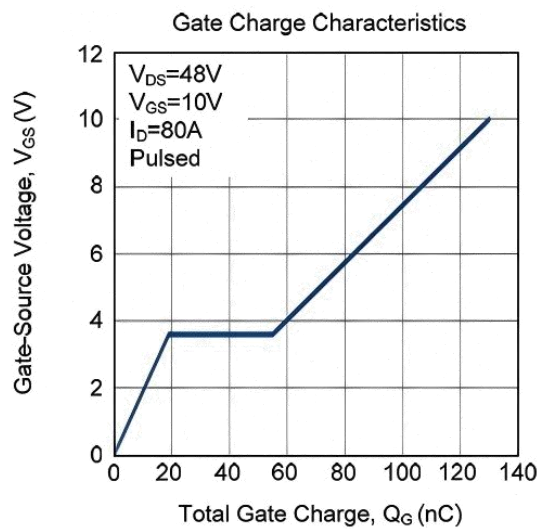
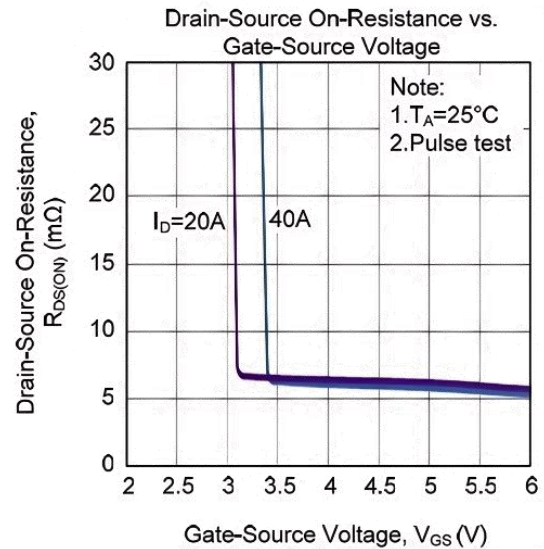
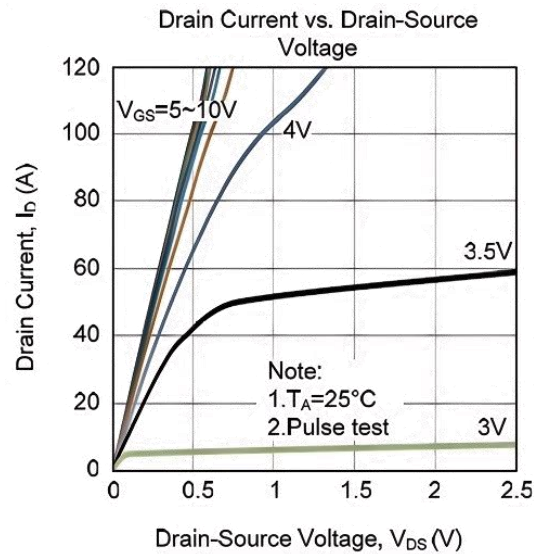


Peak Diode Recovery dv/dt Test Circuit and Waveforms

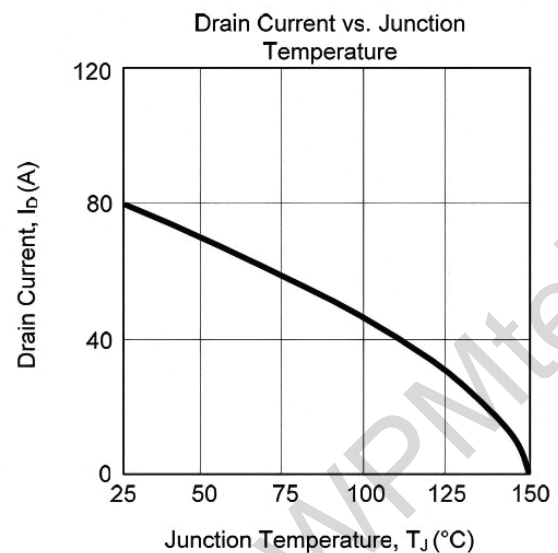
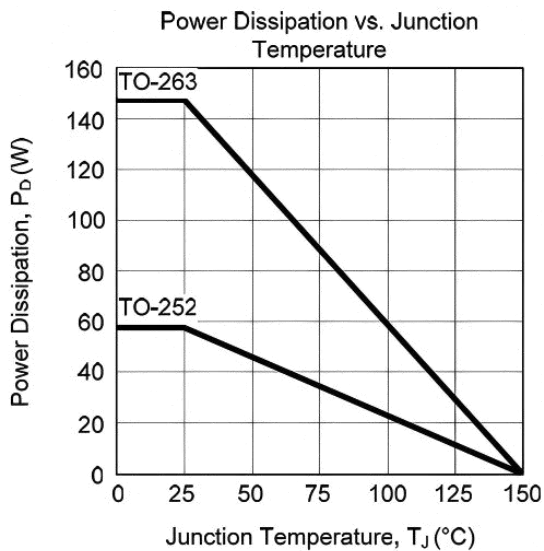
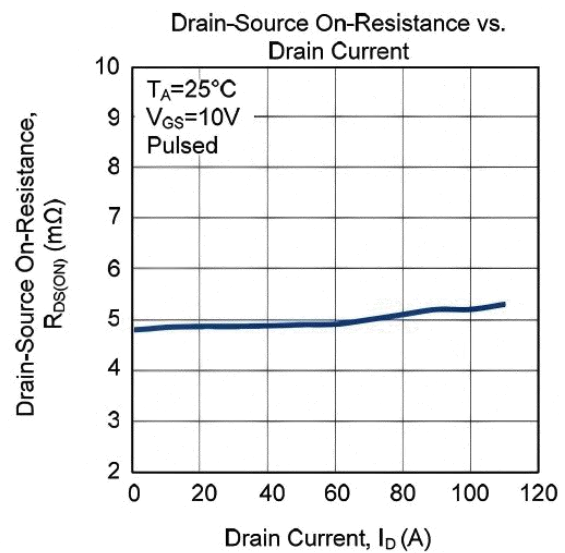
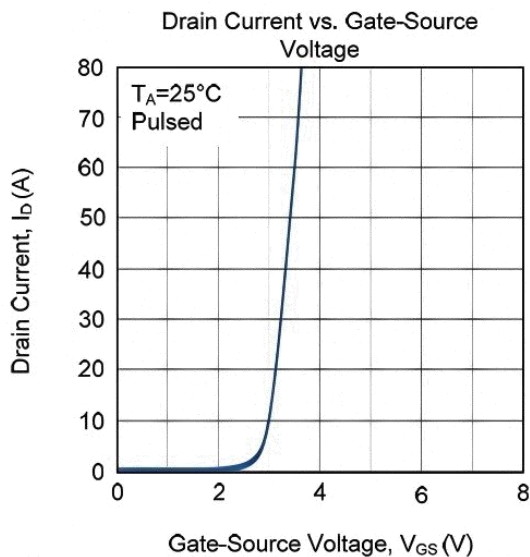
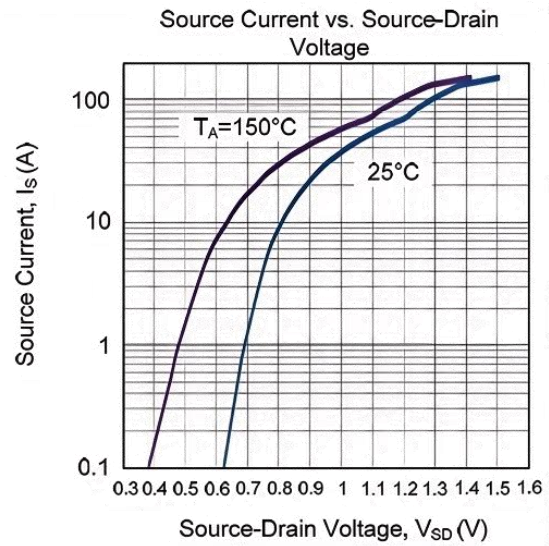
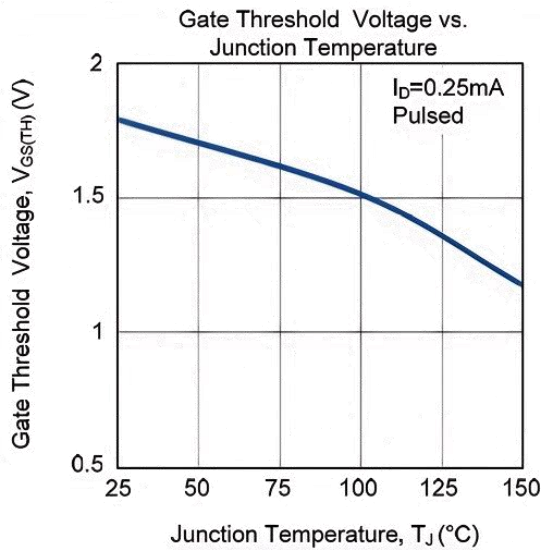
TEST CIRCUITS AND WAVEFORMS(Con.t)



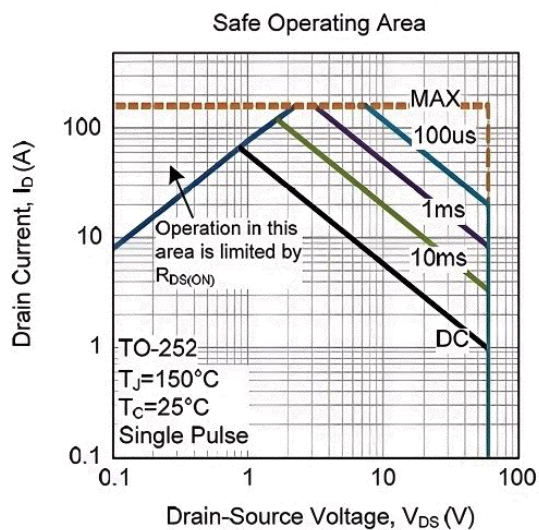
TYPICAL CHARACTERISTICS



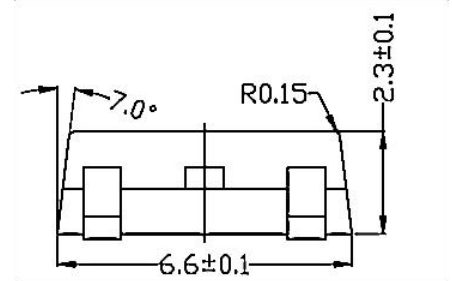
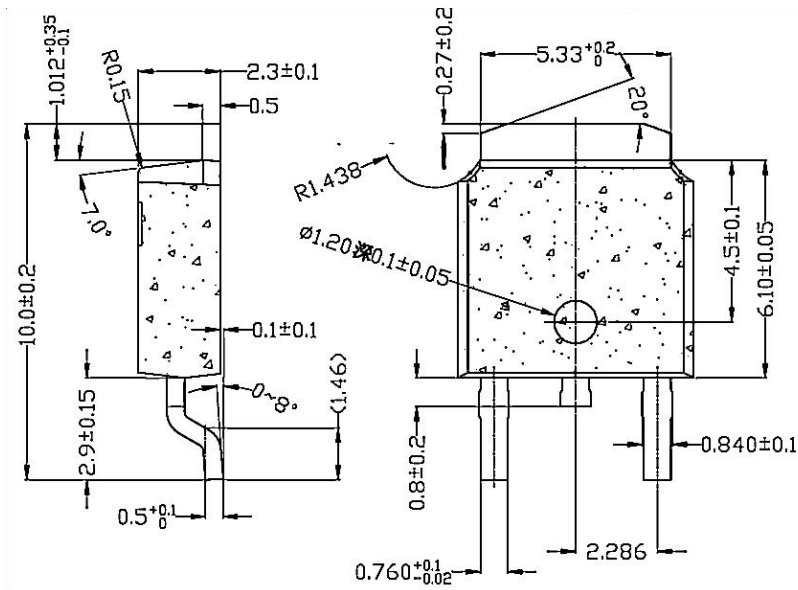
TYPICAL CHARACTERISTICS(Con.t)



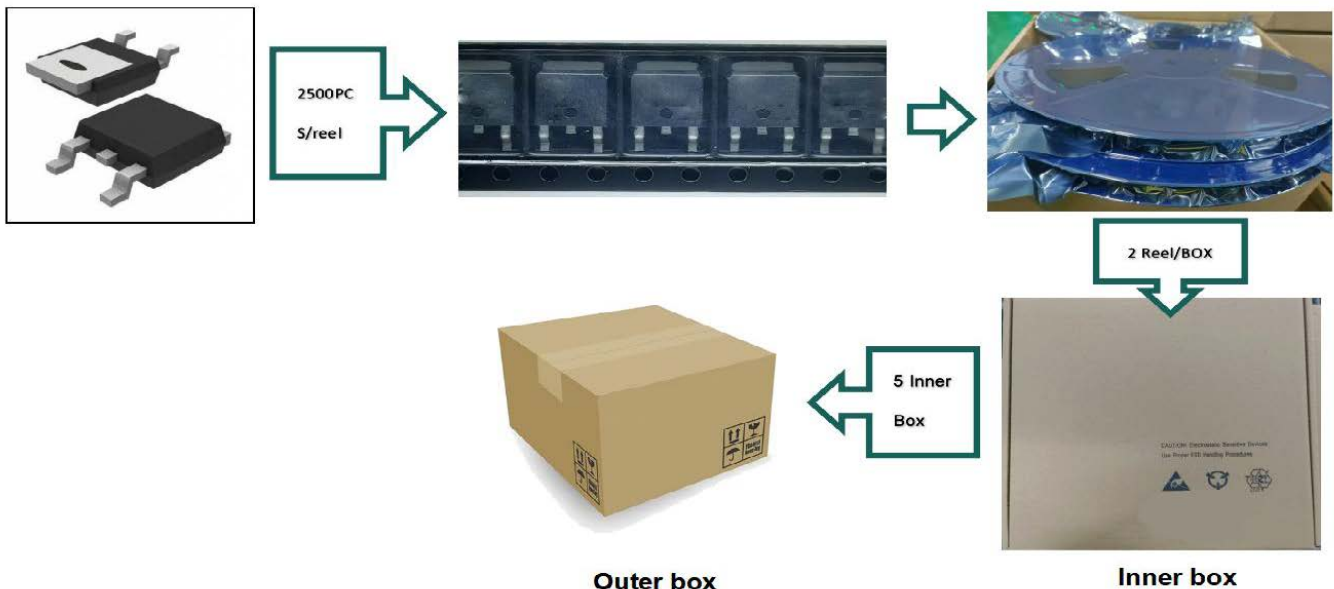
TYPICAL CHARACTERISTICS(Con.t)



TO - 252 PACKAGE OUTLINE DIMENSIONS



TO - 252 PACKING INFORMATION

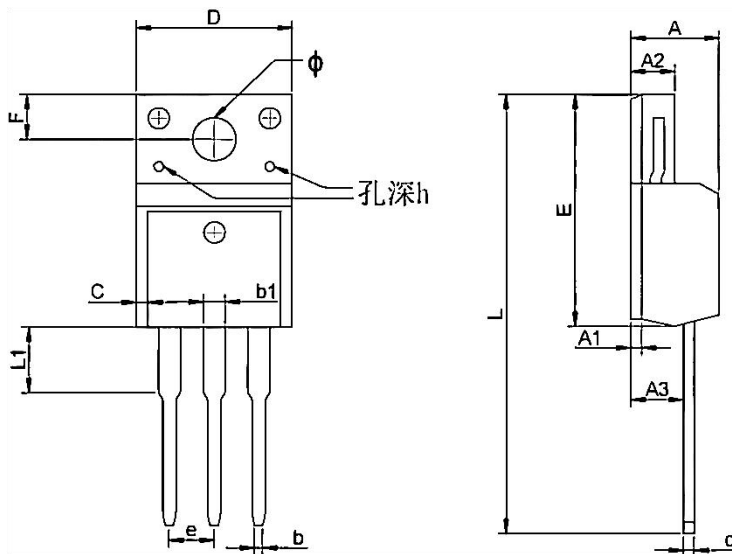


Outer box

Inner box

Package version	Reel dimensions $\Phi \times H$ (mm)	Per Reel (pcs)	Reels per box	Inner box dimensions $L \times W \times H$ (mm)	Outer box (pcs)	Outer box dimensions $L \times W \times H$ (mm)
TO-252	$\Phi 330 \times 20$	2500	2	360*340*50	25000	375*375*280

TO- 220F PACKAGE OUTLINE DIMENSIONS

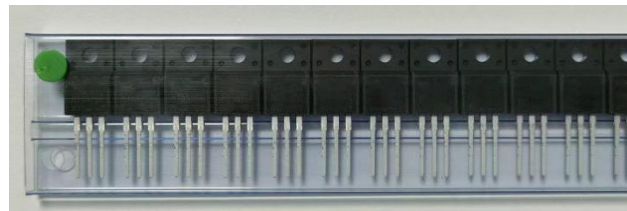


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max	Min	Max
A	4.300	4.750	0.169	0.185
A1	1.830 REF		0.072 REF	
A2	2.300	2.850	0.090	0.112
A3	2.500	2.900	0.098	0.114
b	0.400	0.420	0.016	0.016
b1	1.220	1.280	0.048	0.050
C	0.690	0.720	0.027	0.028
c	0.490	0.510	0.019	0.020
D	9.960	10.200	0.392	0.400
E	15.000	15.950	0.588	0.625
e	2.574 TYP		0.101TYP	
F	3.470 REF		0.136 REF	
y	3.200 REF		0.125 REF	
h	0.000	0.300	0.000	0.012
L	28.780	28.900	1.128	1.133
L1	2.990	3.100	0.117	0.122

TO - 220F PACKING INFORMATION



50PCS

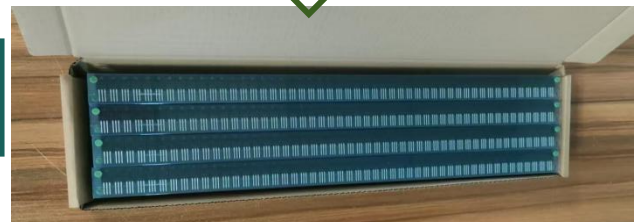


20 Tube



Outer Box

5 Inner
Box



Inner Box

Package version	Tube dimensions LxWxH (mm)	Per Tube (pcs)	Tube per box	Inner box dimensions LxWxH (mm)	PCS/ Inner box	Outer box dimensions LxWxH(mm)	PCS/ Outer box
TO-220F	530*32*7	50	20	580*155*50	1000	602*277*188	5000

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