



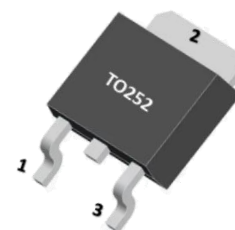
HY10N10

N-CHANNEL POWER MOSFET

10A, 100V N-CHANNEL POWER MOSFET

DESCRIPTION

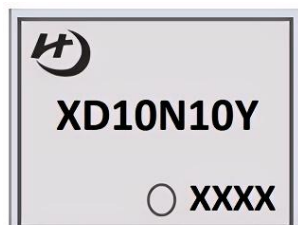
The XD10N10Y provide excellent $R_{DS(ON)}$, low gate charge and operation with low gate voltages. This device is suitable for use as a load switch or in PWM applications.



FEATURES

- * Excellent package for good heat dissipation
- * Ultra low gate charge
- * Low reverse transfer capacitance
- * Fast switching capability
- * Avalanche energy specified

MARKING



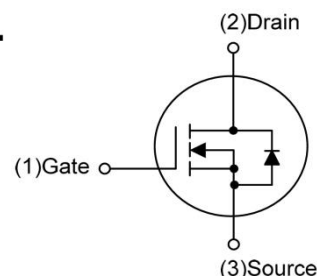
: HY LOGO

XD10N10Y=Device Code

XXXX=Date Code

Solid Dot=Green molding compound

SYMBOL



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

SYMBOL	PARAMETER		RATINGS	UNIT
V_{DSS}	Drain-Source Voltage		100	V
V_{GSS}	Gate-Source Voltage		± 20	V
I_D	Continuous Drain Current		10	A
I_{DM}	Pulsed Drain Current (Note 2)		20	A
E_{AS}	Single Pulsed Avalanche Energy (Note 3)		2	mJ
dv/dt	Peak Diode Recovery dv/dt (Note 4)		3.8	V/nS
P_D	Power Dissipation (Note 1)	TO-252	43	W
T_J	Junction Temperature		+150	$^\circ\text{C}$
T_{STG}	Storage Temperature		-55 ~ +150	$^\circ\text{C}$
$R_{\theta JA}$	Thermal Resistance from Junction to Ambient	TO-252	110	$^\circ\text{C/W}$
$R_{\theta JC}$	Thermal Resistance from Junction to Case	TO-252 (Note 5)	2.91	$^\circ\text{C/W}$

Notes: 1. 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. Repetitive Rating: Pulse width limited by maximum junction temperature

3. $L=0.1\text{mH}$, $I_{AS}=6.3\text{A}$, $V_{DD}=50\text{V}$, $R_G=25\Omega$, Starting $T_J=25^\circ\text{C}$

4. $I_{SD}\leq 10\text{A}$, $di/dt\leq 200\text{A}/\mu\text{s}$, $V_{DD}\leq V_{(BR)DSS}$, $T_J\leq 25^\circ\text{C}$

5. Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper plate.



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■ ELECTRICAL CHARACTERISTICS (T_A=25°C, unless otherwise specified)

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BVDSS	VGS=0V, ID=250μA	100			V
Zero gate voltage drain current		IDSS	VDS=100V, VGS=0V			1	μA
Gate- Source Leakage Current	Forward	IGSS	VGS=20V, VDS=0V			100	nA
	Reverse		VGS=-20V, VDS=0V			-100	nA
ON CHARACTERISTICS							
Gate Threshold Voltage		VGS(TH)	VDS=VGS , ID=250μA	1.0		3.0	V
Static Drain-Source On-State Resistance		RDS(ON)	VGS=4.5V, ID=5.0A			110	mΩ
DYNAMIC CHARACTERISTICS							
Input Capacitance		CISS	VDS=25V,VGS=0V f= 1.0MHz		729		pF
Output Capacitance		COSS			48		pF
Reverse Transfer Capacitance		CRSS			37		pF
SWITCHING CHARACTERISTICS							
Total Gate Charge (Note 1)		QG	VDS=80V, VGS=10V ID=10A(Note 1, 2)		23		nC
Gate-Source Charge		QGS			4		nC
Gate-Drain Charge		QGD			6		nC
Turn-On Delay Time (Note 1)		tD(ON)	VDS=50V,VGS=10V ID=10A,RG=6Ω (Note 1, 2)		6		ns
Turn-On Rise Time		tR			15		ns
Turn-Off Delay Time		tD(OFF)			19		ns
Turn-Off Fall Time		tF			18		ns
DRAIN-SOURCE DIODE CHARACTERISTICS							
Maximum Body-Diode Continuous Current		IS				10	A
Maximum Body-Diode Pulsed Current		ISM				20	A
Drain-source diode forward voltage (Note 1)		VSD	VGS = 0V, IS =10A			1.4	V
Reverse Recovery Time (Note 1)		trr	IS=10A, VGS=0V		42		ns
Reverse Recovery Charge		Qrr	dI/dt=100A/μs		85		μC

Note:

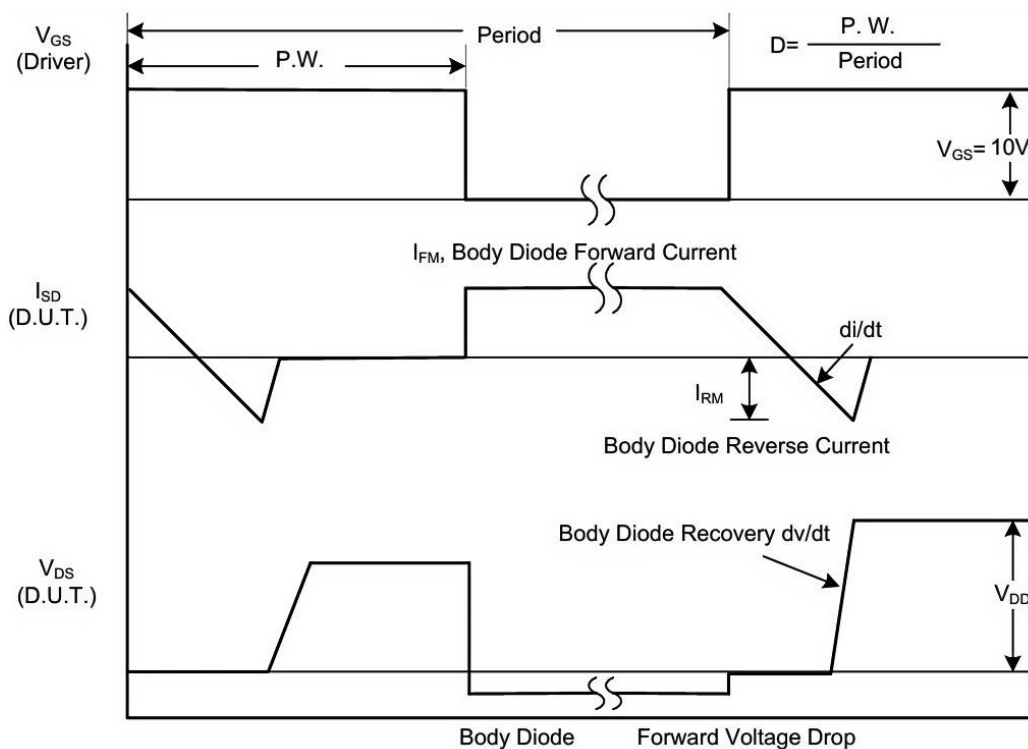
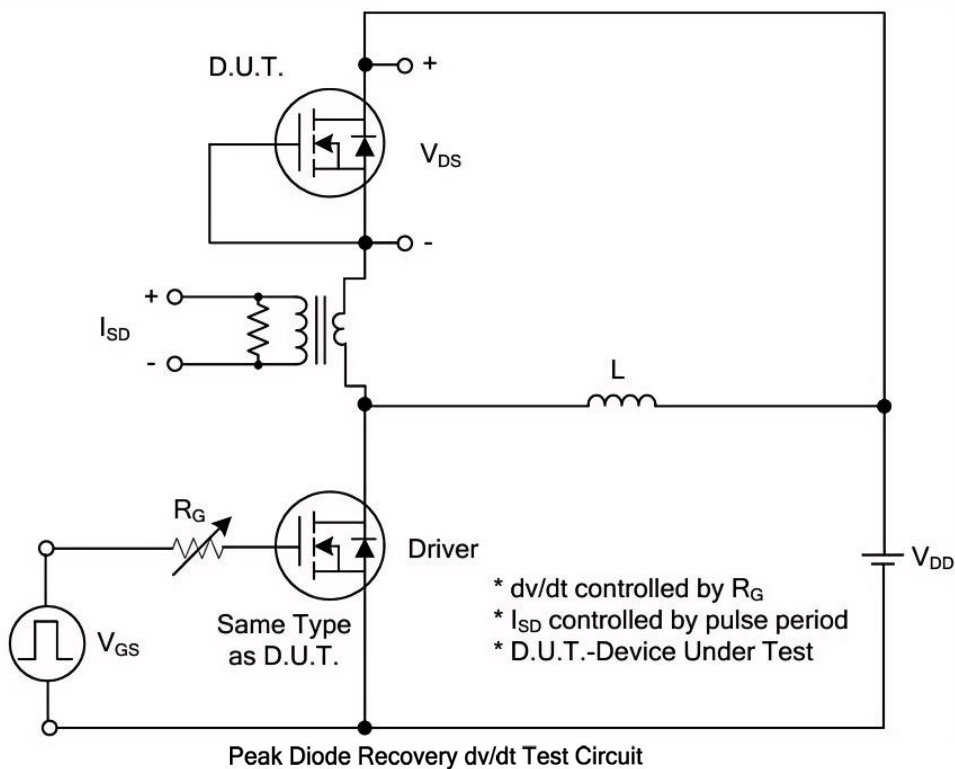
1. Pulse Test : Pulse width ≤ 300μs, Duty cycle ≤ 2%.
2. Essentially independent of operating temperature.



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■ TEST CIRCUITS AND WAVEFORMS



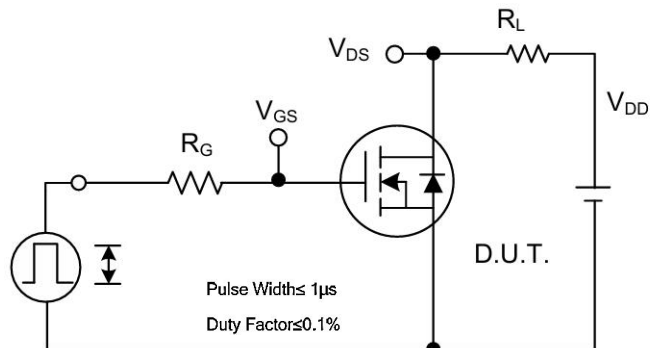
Peak Diode Recovery dv/dt Waveforms



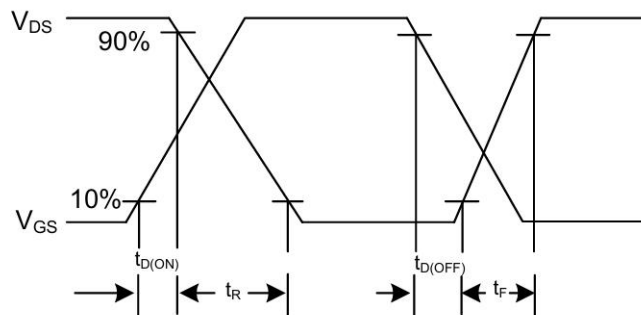
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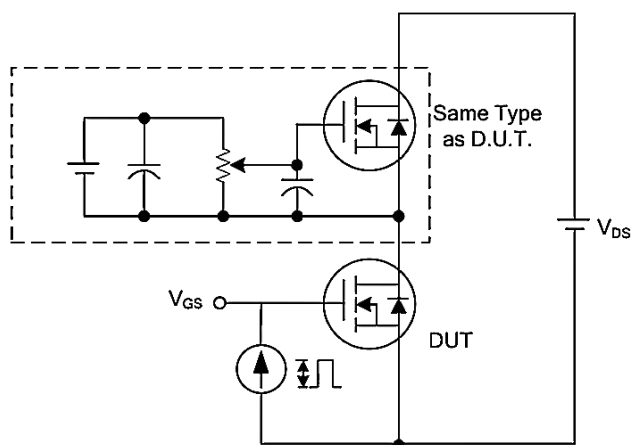
■ TEST CIRCUITS AND WAVEFORMS(Con.t)



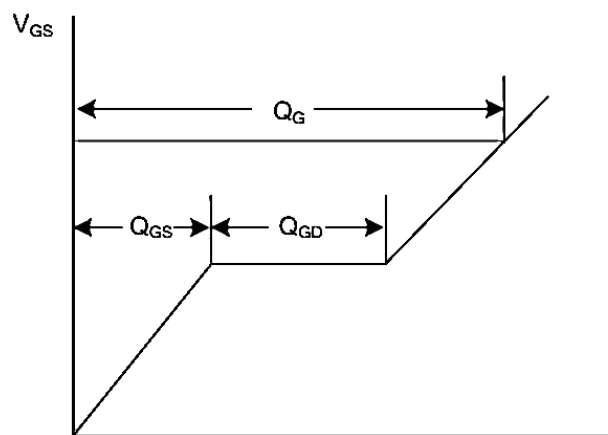
Switching Test Circuit



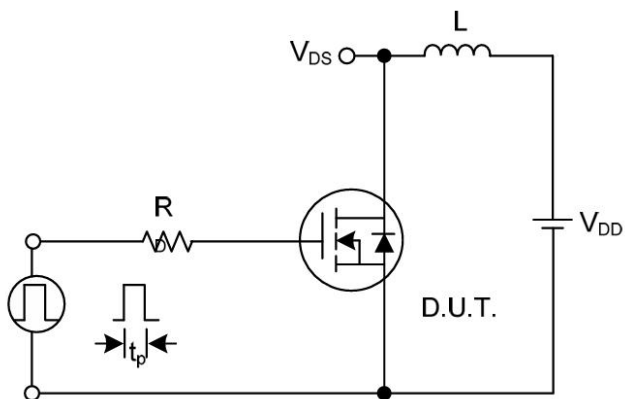
Switching Waveforms



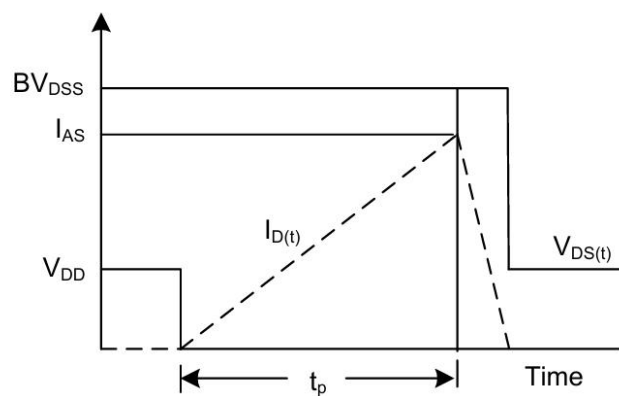
Gate Charge Test Circuit



Charge
Gate Charge Waveform



Unclamped Inductive Switching Test Circuit



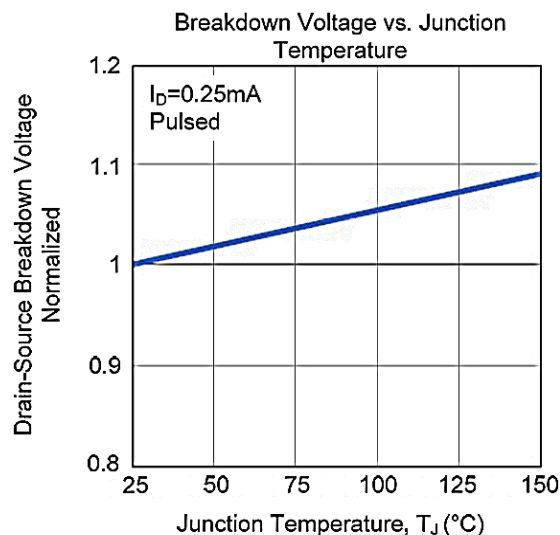
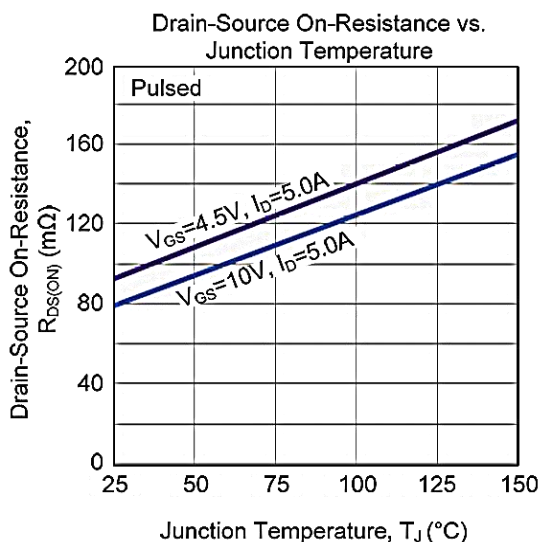
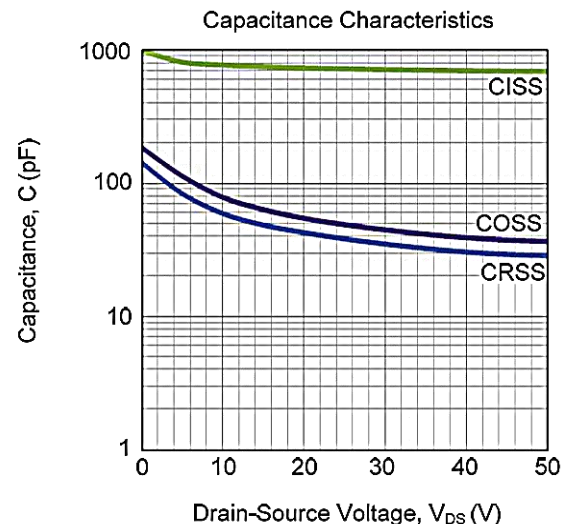
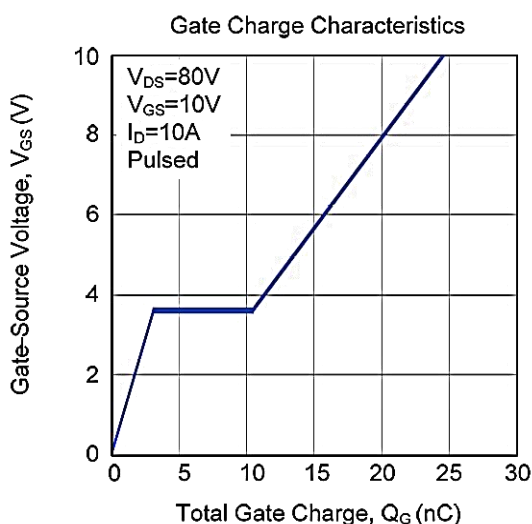
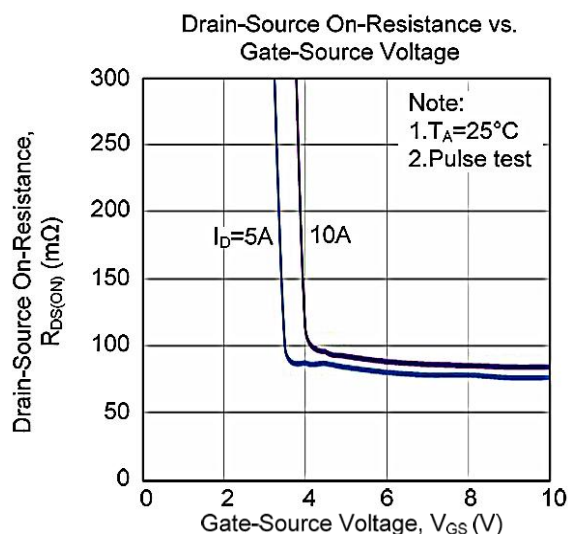
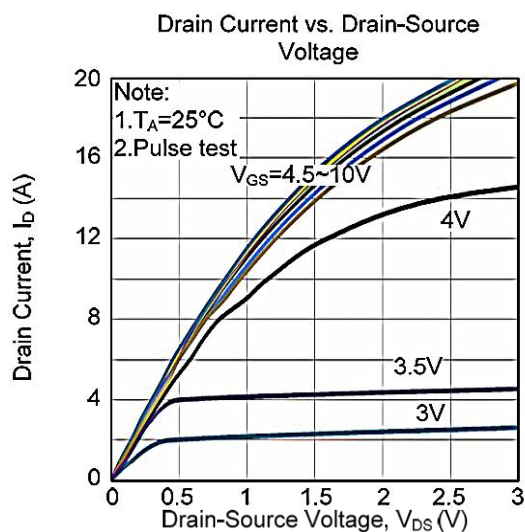
Unclamped Inductive Switching Waveforms



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■ TYPICAL CHARACTERISTICS

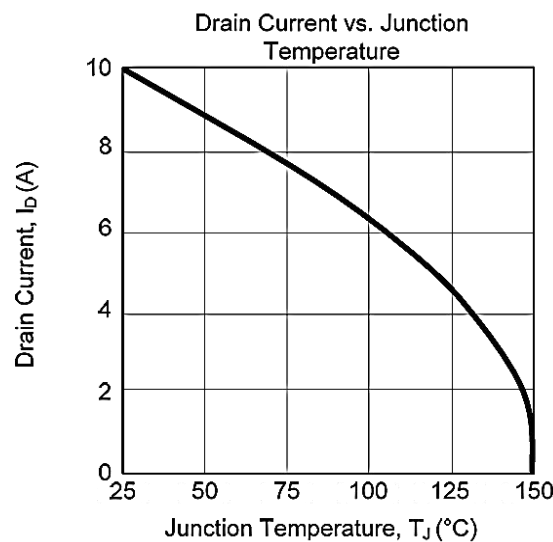
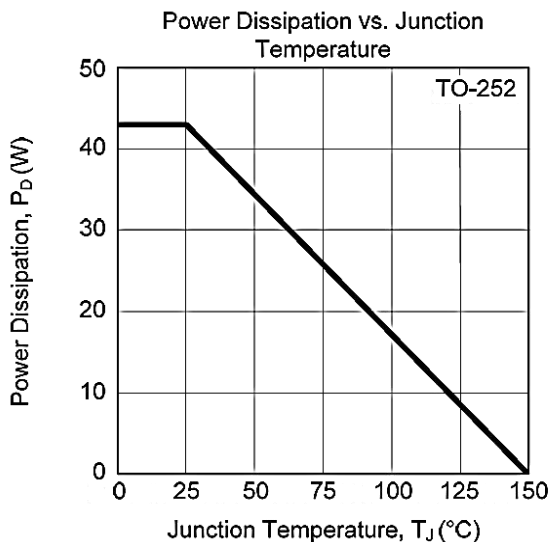
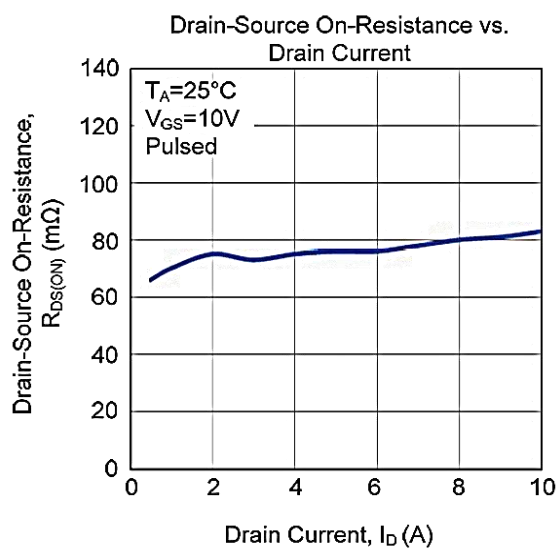
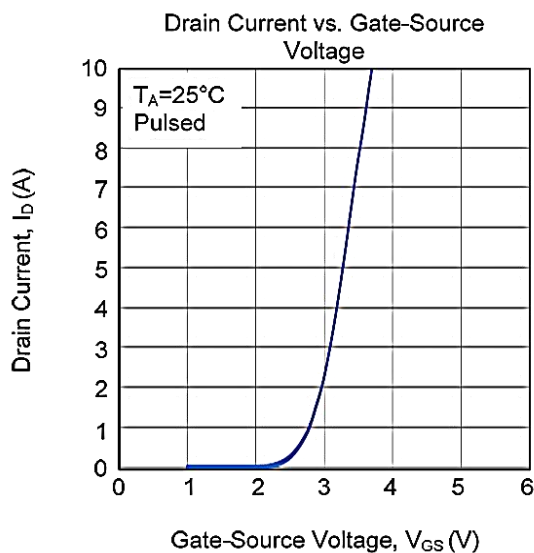
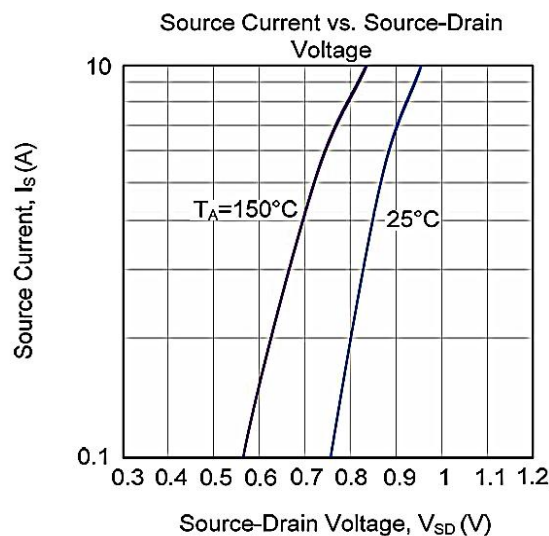
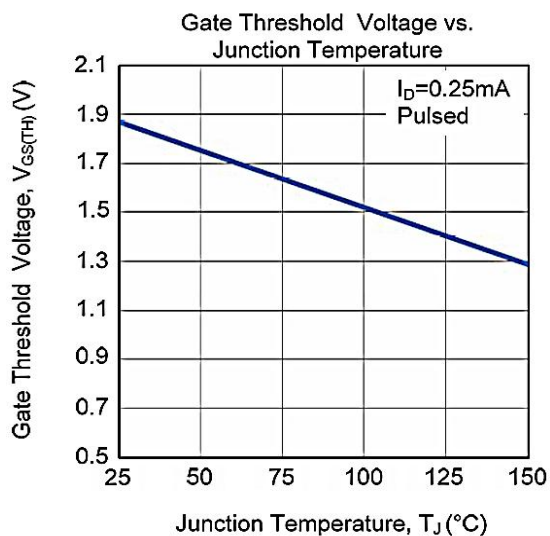




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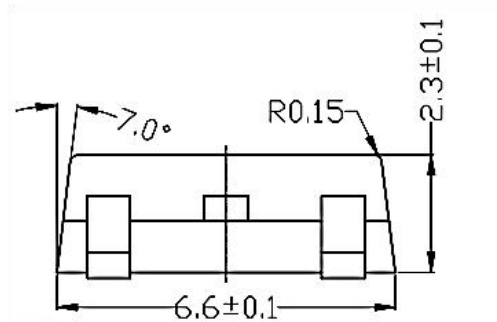
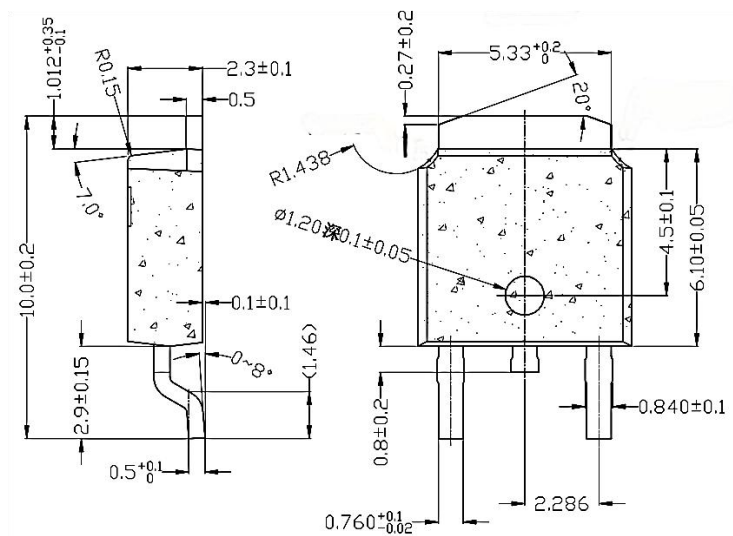




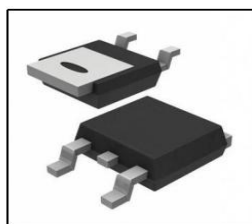
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TO - 252 PACKAGE OUTLINE DIMENSIONS



TO - 252 PACKING INFORMATION



2500PC
S/reel



2 Reel/BOX



Outer box

5 Inner
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