



HY18P10

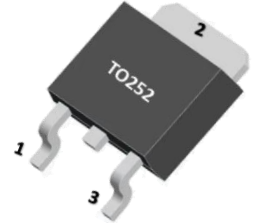
P-CHANNEL POWER MOSFET

-18A, -100V P-CHANNEL POWER MOSFET

DESCRIPTION

The XD18P10Y is a P-channel power MOSFET using our advanced technology to provide the customers with high switching speed, cost-effectiveness and a minimum on-state resistance. It can also withstand high energy in the avalanche.

The XD18P10Y meet the ROHS and Green Product requirement with full function reliability approved.



FEATURES

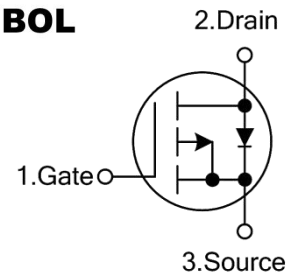
- * $R_{DS(ON)} \leq 180 \text{ m}\Omega$ @ $V_{GS} = -10V, I_D = -9.0A$
- $R_{DS(ON)} \leq 210 \text{ m}\Omega$ @ $V_{GS} = -4.5V, I_D = -9.0A$
- * High Switching Speed

MARKING



: HY LOGO
XD18P10Y=Device Code
XXXX=Date Code
Solid Dot=Green molding compound

SYMBOL



ABSOLUTE MAXIMUM RATINGS(TA=25°C, unless otherwise specified.)

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	VDSS	-100	V
Gate-Source Voltage	VGSS	±20	V
Continuous Drain Current (TC=25°C, VGSS @ -10V)	ID	-18	A
Pulsed Drain Current (Note 2)	IDM	-24	A
Avalanche Energy	EAS	39.2	mJ
Single Pulsed (Note 3)			
Power Dissipation (TC=25°C)	PD	48	W
Junction Temperature	TJ	+150	°C
Storage Temperature	TSTG	-55 ~ +150	°C
Junction to Ambient	θJA	110	°C/W
TO-252			
Junction to Case (Note 4)	θJC	2.6	°C/W
TO-252			

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 = 0.1mH, IAS = -19.8A, VDD = -50V, RG = 25Ω, Starting TJ = 25°C.

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



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■ **ELECTRICAL CHARACTERISTICS** (TA=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
Drain-Source Leakage Current	IDSS	VDS=-100V, VGS=0V			-1	μA
Gate- Source Leakage Current	IGSS	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=-10V, ID=-9A			180	mΩ
		VGS=-4.5V, ID=-9A			210	mΩ
DYNAMIC CHARACTERISTICS						
Input Capacitance	CISS	VDS=-25V, VGS=0V f= 1.0MHz		1592		pF
Output Capacitance	COSS			83.5		pF
Reverse Transfer Capacitance	CRSS			69.1		pF
SWITCHING CHARACTERISTICS						
Total Gate Charge	QG	VDS=-80V, VGS= -10V ID=-18A, IG=-1mA (Note 1, 2)		34.2		nC
Gate-Source Charge	QGS			7.0		nC
Gate-Drain Charge	QGD			5.6		nC
Turn-On Delay Time	tD(ON)	VDD=-50V, ID=-18A, RG=6Ω VGS= -10V (Note 1, 2)		5.8		ns
Turn-On Rise Time	tR			17.3		ns
Turn-Off Delay Time	tD(OFF)			37.6		ns
Turn-Off Fall Time	tF			17.2		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Maximum Continuous Drain-Source Diode Forward Current	IS				-18	A
Maximum Pulsed Drain-Source Diode Forward Current	ISM	(Note 2)			-24	A
Drain-Source Diode Forward Voltage	VSD	IS=-18A, VGS=0V			-5	V
Reverse Recovery Time	trr	IF=-18A, VGS=0V		106		ns
Reverse Recovery Charge	Qrr	dIF/dt=100A/μs (Note 2)		0.4		μC

Notes:

- Essentially independent of operating temperature.
- Pulse width ≤ 300μs; duty cycle ≤ 2%.



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TEST CIRCUITS AND WAVEFORMS

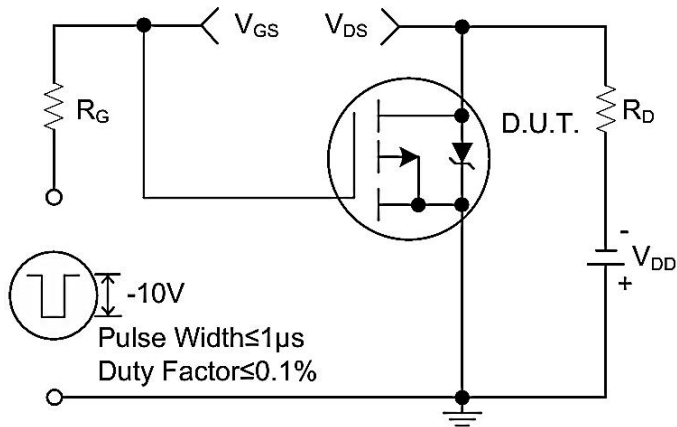


Fig. 1a Switching Time Test Circuit

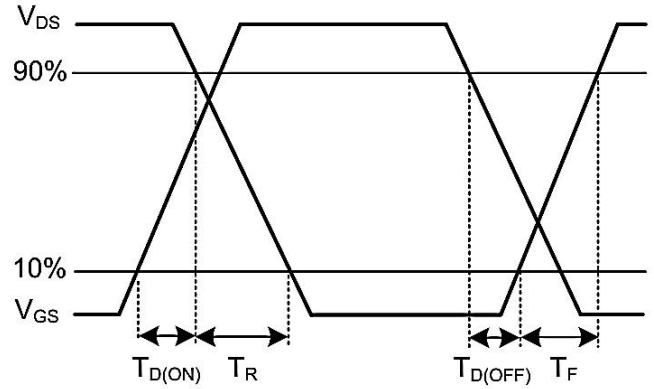


Fig. 1b Switching Time Waveforms

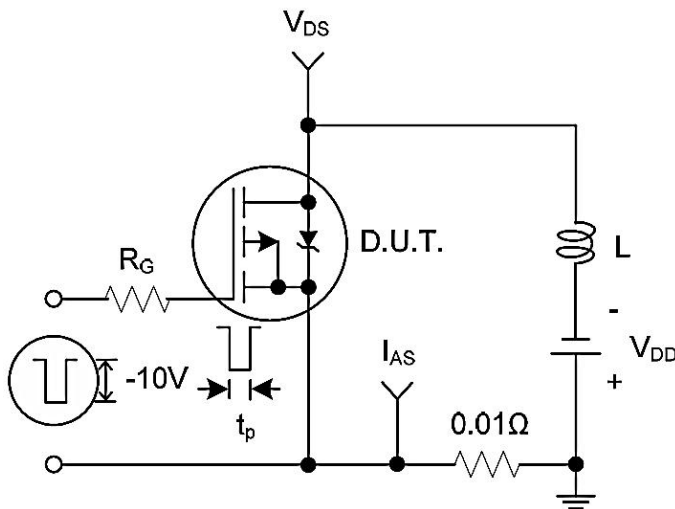


Fig. 2a Unclamped Inductive Test Circuit

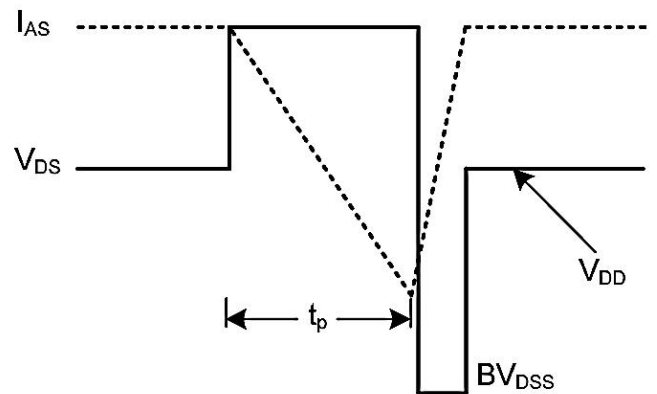


Fig. 2b Unclamped Inductive Waveforms

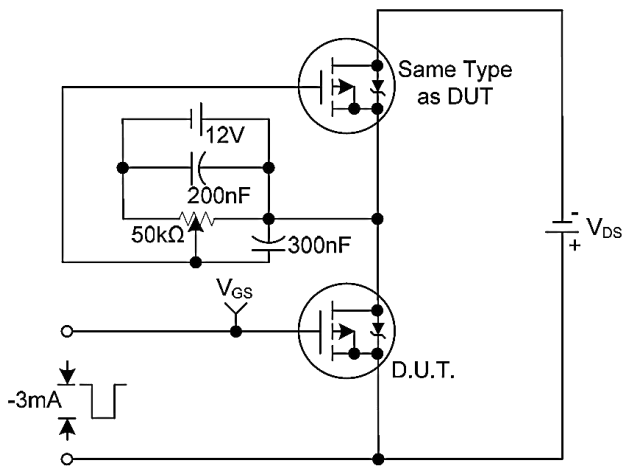


Fig.3a Gate Charge Test Circuit

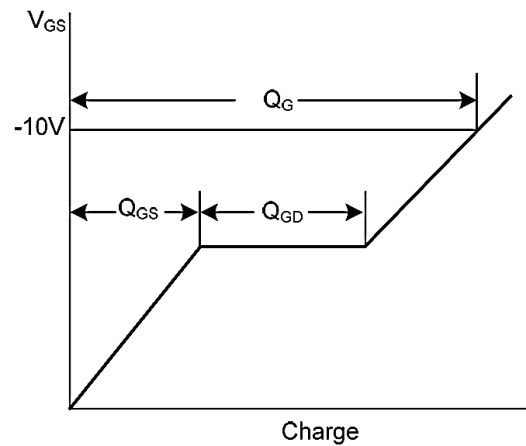
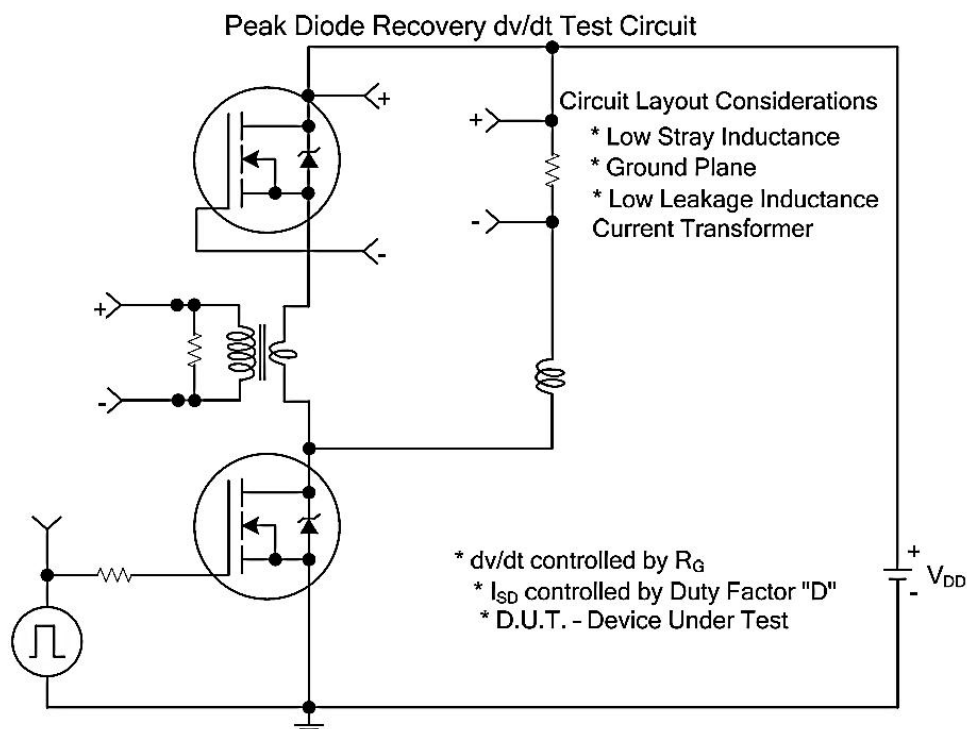


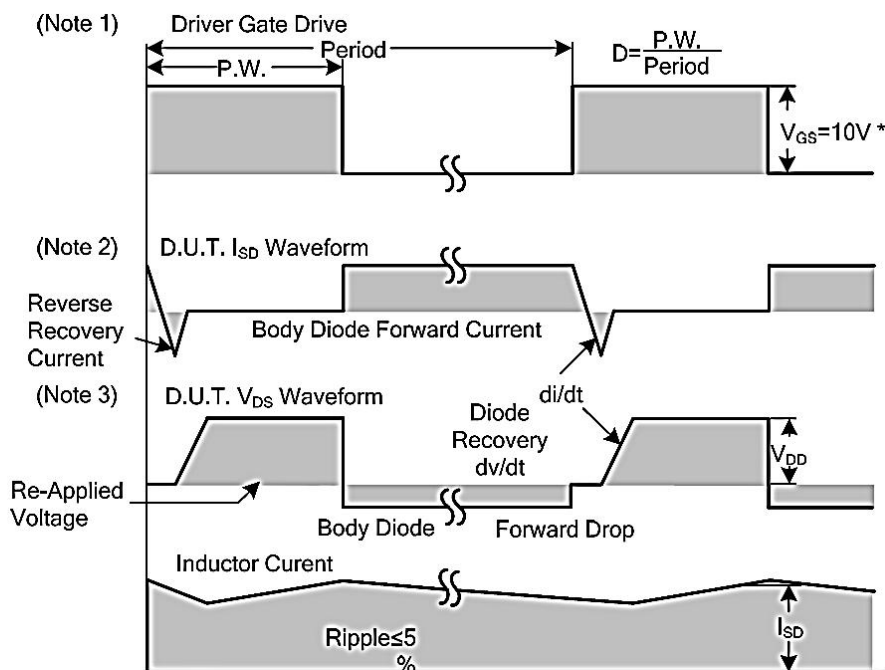
Fig. 3b Gate Charge Waveform



■ TEST CIRCUITS AND WAVEFORMS(Con.t)



* Reverse Polarity for P-Channel
** Use P-Channel Driver for P-Channel Measurements



*** $V_{GS} = 5V$ for Logic Level and 3V Drive Devices

For N and P Channel Power MOSFET

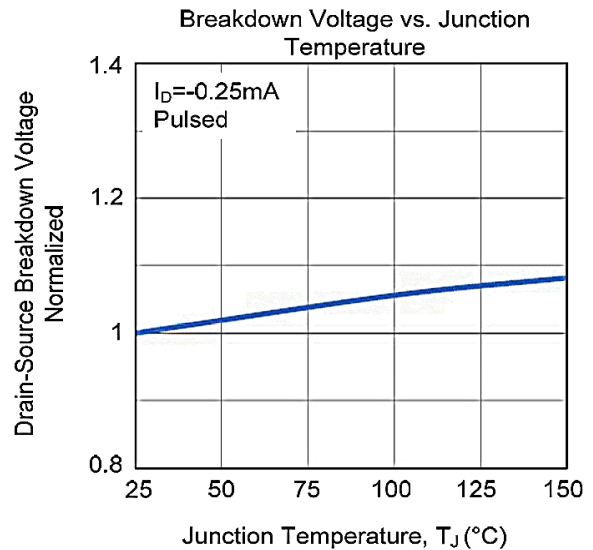
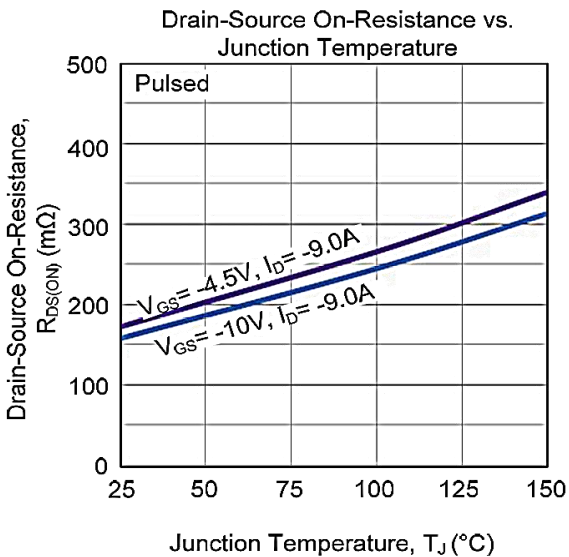
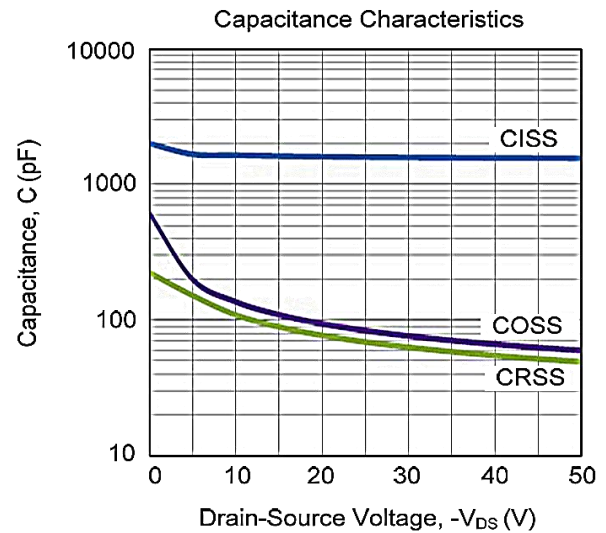
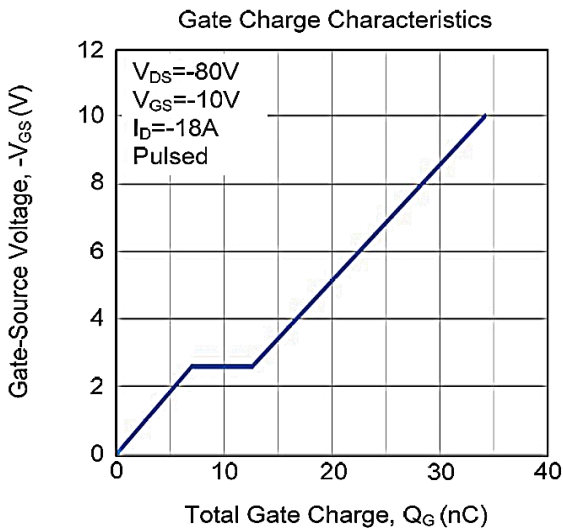
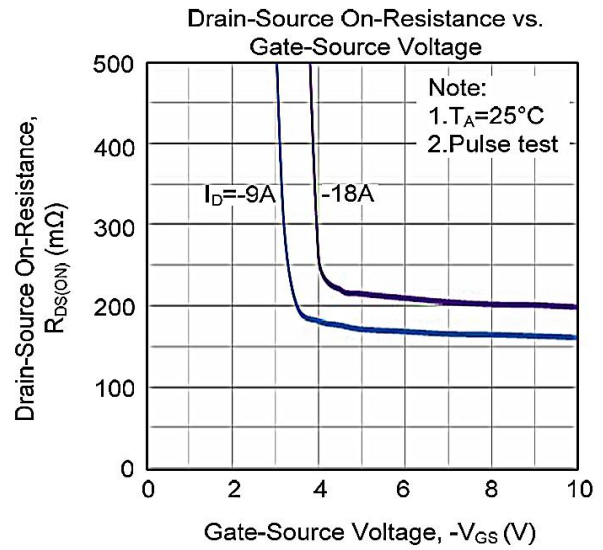
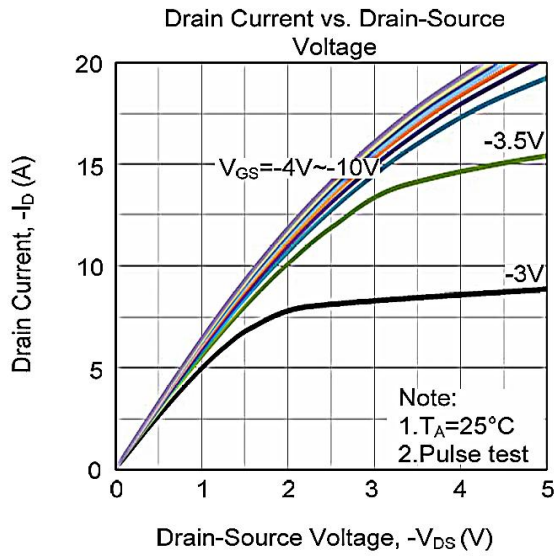
- Notes: 1. Repetitive rating; pulse width limited by max. junction temperature.
2. $V_{DD} = -25V$, starting $T_J = 25^\circ C$, $L = 2.7mH$, $R_G = 25\Omega$, $I_{AS} = -18A$. (See Figure 2)
3. $I_{SD} \leq -18A$, $di/dt \leq 200A/\mu s$, $V_{DD} \leq BV_{DSS}$, $T_J \leq 150^\circ C$



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TYPICAL CHARACTERISTICS

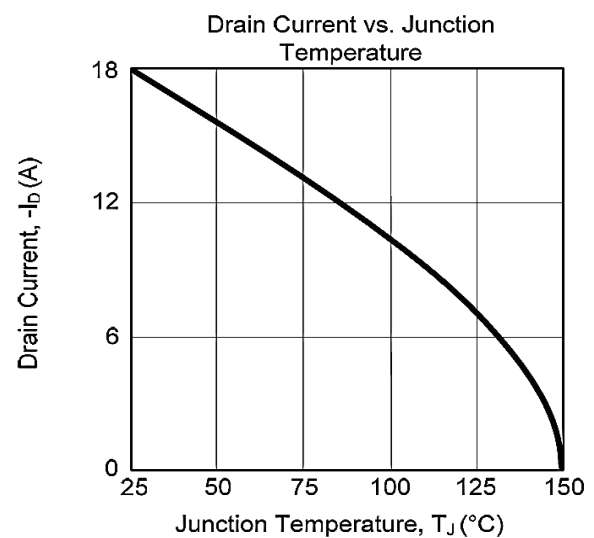
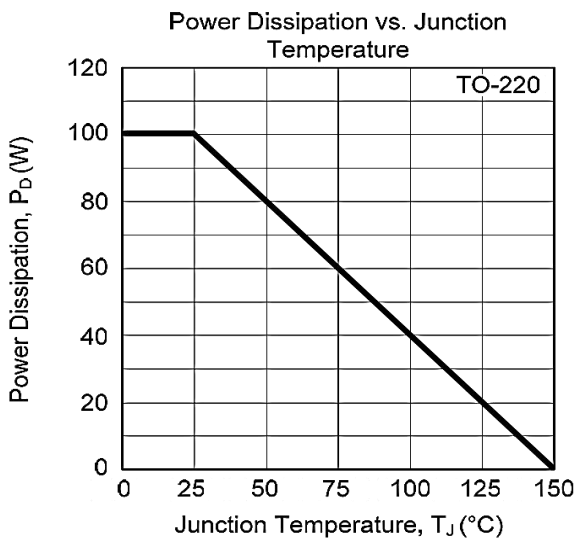
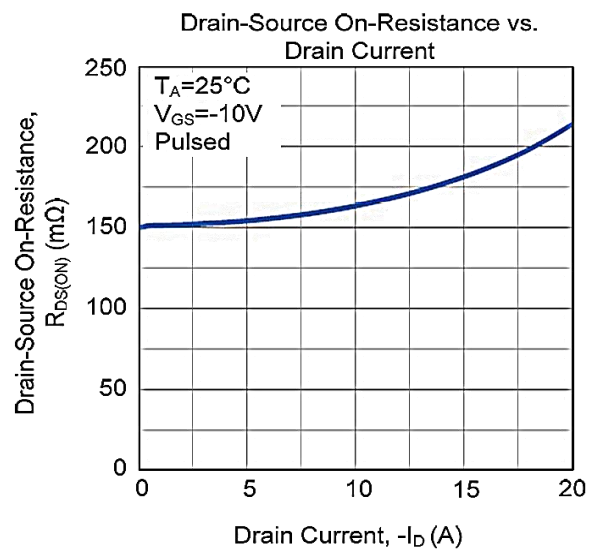
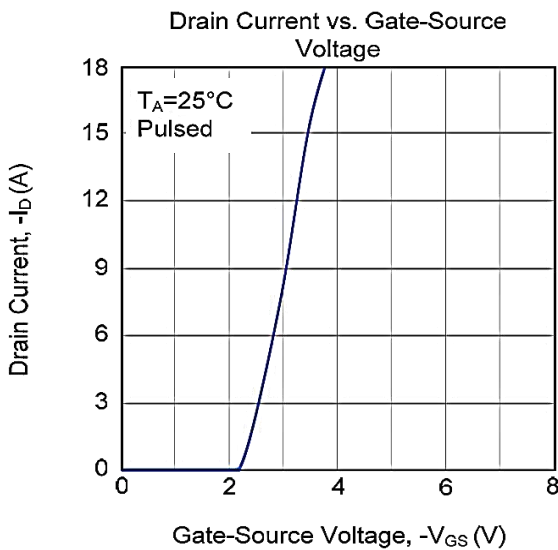
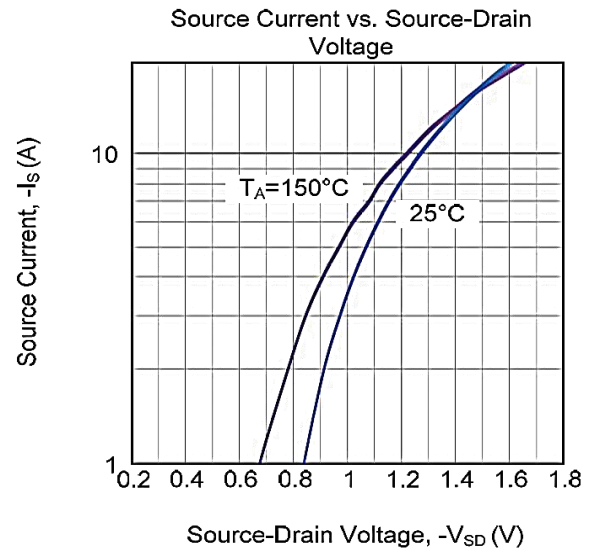
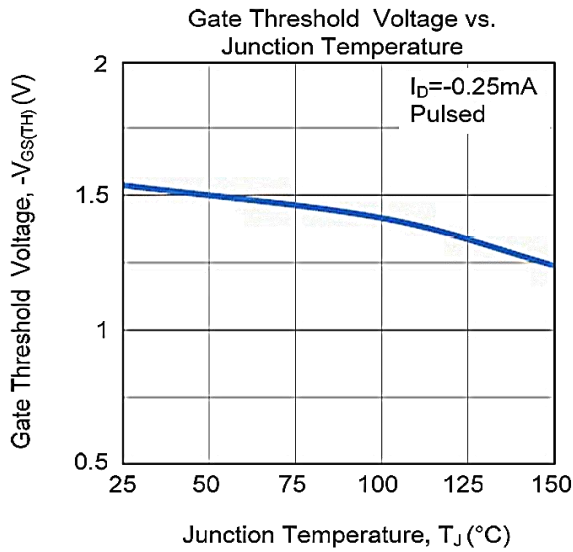




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■ **TYPICAL CHARACTERISTICS(Con.t)**

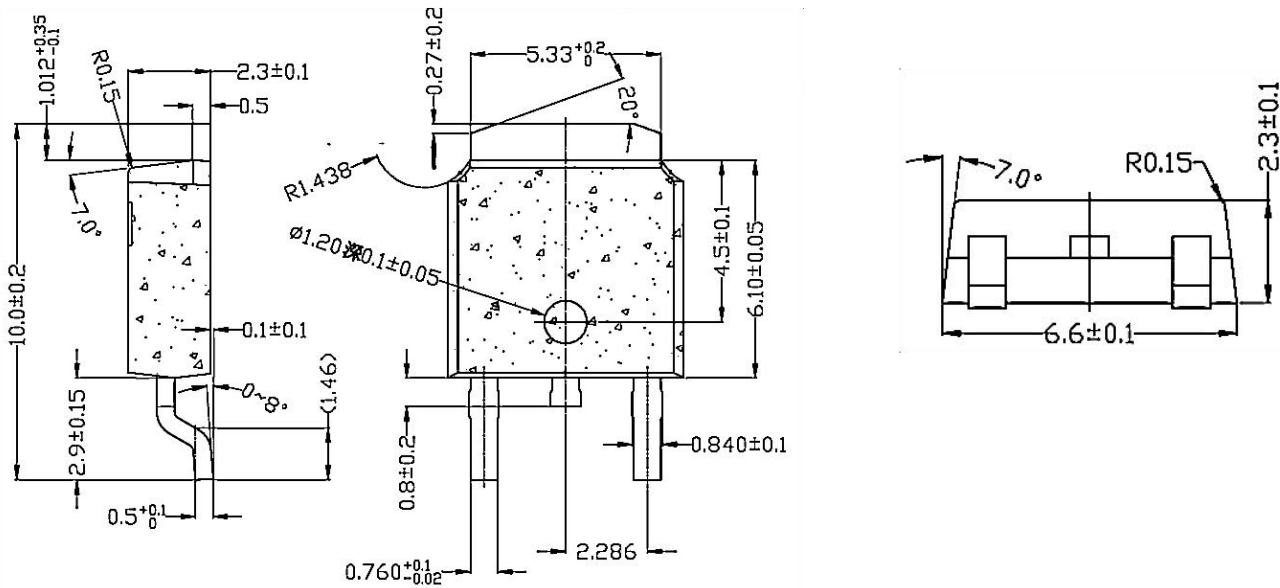




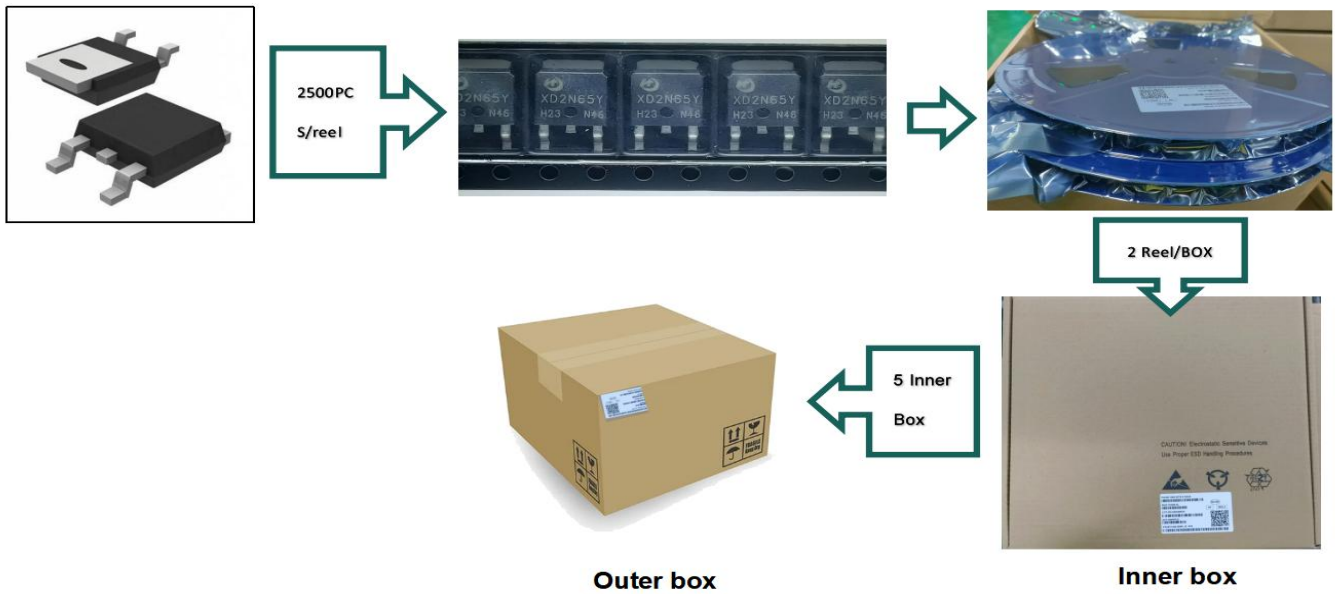
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TO - 252 PACKAGE OUTLINE DIMENSIONS



TO - 252 PACKING INFORMATION



Package version	Reel dimensions Φ×H (mm)	Per Reel (pcs)	Reels per box	Inner box dimensions L×W×H(mm)	Outer box (pcs)	Outer box dimensions L×W×H (mm)
T0-252	Φ 330*20	2500	2	360*340*50	25000	375*375*280