

Features

- Low on resistance
- Low reverse transfer capacitances
- 100% single pulse avalanche energy test
- 100% ΔVDS test
- Pb-Free plating / Halogen-Free / RoHS compliant

Key Parameters

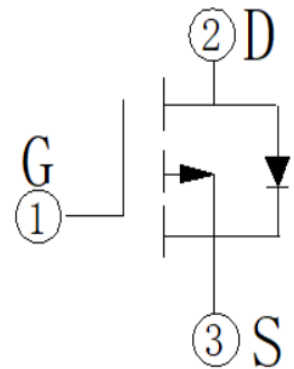
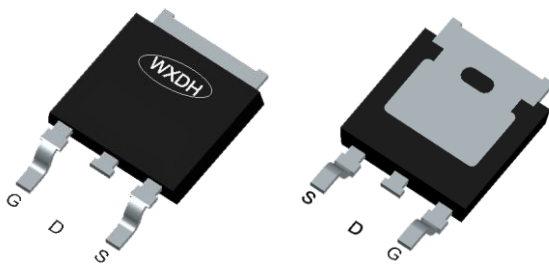
V_{DS}	-100V
$R_{DS(on)typ.}$	33mΩ
I_D	-35A
$C_{iss@10V}$	5250pF
Q_{gd}	19nC

Applications

- Load switch



TO-252



Marking & Packing Information

Part #	Package	Marking	Tube/Reel	Qty(pcs)
DH100P30D	TO-252	DH100P30D	Tape & Reel	2500/box

Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Drain-source voltage	V_{DS}	-100	V
Gate-Source voltage	V_{GS}	±20	V
Continuous drain current $T_C = 25^\circ\text{C}$ $T_C = 100^\circ\text{C}$	I_D	-35 -22	A
Pulsed drain current ($T_C = 25^\circ\text{C}$, t_p limited by T_{jmax})	$I_{D\ pulse}$	-140	A
Avalanche energy, single pulse ($L=0.5\text{mH}$, $R_g=25\Omega$) ^[1]	E_{AS}	400	mJ
Power dissipation $T_C = 25^\circ\text{C}$ $T_A = 25^\circ\text{C}$	P_{tot}	96	W
		1.7	W
Operating junction and storage temperature	T_j, T_{stg}	-55...+150	°C

Notes: 1. EAS was tested at $T_j = 25^\circ\text{C}$, $L = 0.5\text{mH}$, $I_d = -28\text{A}$.

Thermal Resistance

Parameter	Symbol	Max	Unit
Thermal resistance, junction – case.	R_{thJC}	1.3	°C/W
Thermal resistance, junction – ambient(min. footprint)	R_{thJA}	75	

Electrical Characteristic (at $T_j = 25^\circ\text{C}$, unless otherwise specified)

Static Characteristic

Parameter	Symbol	Value			Unit	Test Condition
		min.	typ.	max.		
Drain-source breakdown voltage	BV_{DSS}	-100	-	-	V	$V_{GS}=0\text{V}$, $I_D=-250\mu\text{A}$
Gate threshold voltage	$V_{GS(th)}$	-1.0	-2.0	-2.5	V	$V_{DS}=V_{GS}$, $I_D=-250\mu\text{A}$
Zero gate voltage drain current	I_{DSS}	-	-	-1	μA	$V_{DS}=-100\text{V}$, $V_{GS}=0\text{V}$ $T_j=25^\circ\text{C}$
		-	-	-100		$T_j=125^\circ\text{C}$
Gate-source leakage current	I_{GSS}	-	-	-100	nA	$V_{GS}=-20\text{V}$, $V_{DS}=0\text{V}$
Drain-source on-state resistance	$R_{DS(on)}$	-	33	40	mΩ	$V_{GS}=-10\text{V}$, $I_D=-15\text{A}$ $T_j=25^\circ\text{C}$
		-	38	50		$V_{GS}=-4.5\text{V}$, $I_D=-15\text{A}$
Transconductance	g_{fs}	-	45	-	S	$V_{DS}=-5\text{V}$, $I_D=-15\text{A}$

Dynamic Characteristic

Parameter	Symbol	Value			Unit	Test Condition
		min.	typ.	max.		
Input Capacitance	C_{iss}	-	5250	-	pF	$V_{GS}=0V, V_{DS}=-50V,$ $f=1MHz$
Output Capacitance	C_{oss}	-	169	-		
Reverse Transfer Capacitance	C_{rss}	-	135	-		
Gate Total Charge	Q_G	-	94	-	nC	$V_{GS}=-10V, V_{DS}=-50V,$ $I_D=-15A$
Gate-Source charge	Q_{gs}	-	16	-		
Gate-Drain charge	Q_{gd}	-	19	-		
Gate plateau voltage	$V_{plateau}$	-	3.4	-	V	
Turn-on delay time	$t_{d(on)}$	-	11	-	ns	$V_{GS}=-10V, V_{DD}=-50V,$ $R_{G_ext}=3\Omega, I_D=-15A$
Rise time	t_r	-	39	-		
Turn-off delay time	$t_{d(off)}$	-	146	-		
Fall time	t_f	-	67	-		

Body Diode Characteristic

Parameter	Symbol	Value			Unit	Test Condition
		min.	typ.	max.		
Diode Max Current	I_S		-	-35	A	-
Diode Forward Voltage	V_{SD}	-	-	-1.2	V	$V_{GS}=0V, I_{SD}=-15A$
Diode Reverse Recovery Time	t_{rr}	-	38	-	ns	$I_F=-15A,$ $dI/dt=-100A/\mu s$
Diode Reverse Recovery Charge	Q_{rr}	-	36	-	nC	

Typical Characteristics Diagram

Fig1. Output Characteristics

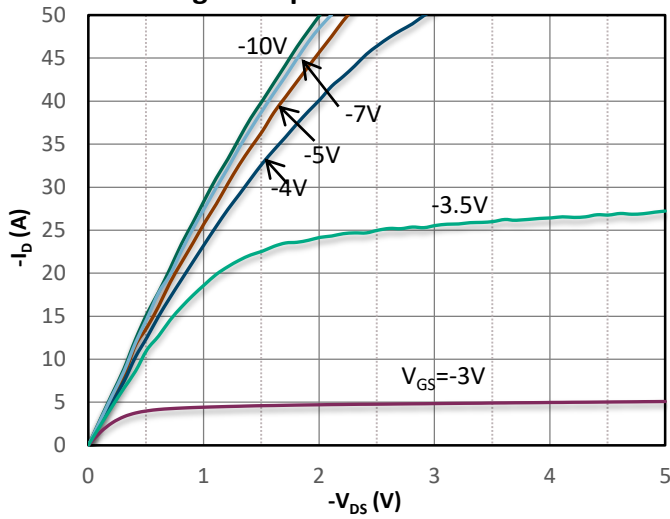


Fig2. Transfer Characteristics

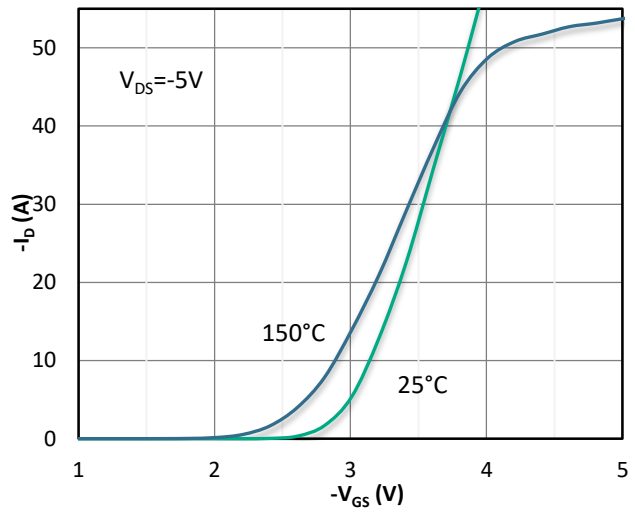


Fig3. R_{DS(on)} vs Drain Current

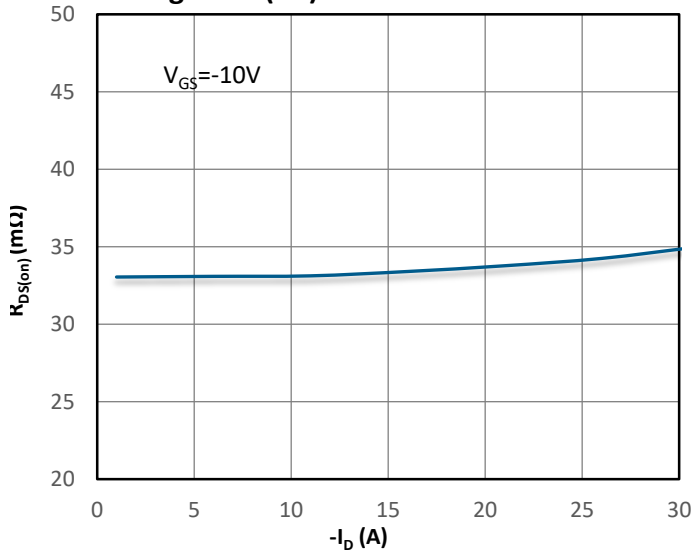


Fig 4. R_{DS(on)} vs Gate Voltage

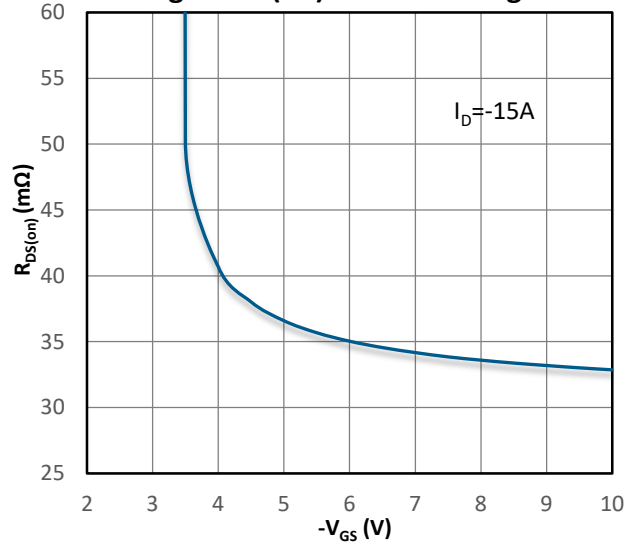


Fig5. R_{DS(on)} vs. Temperature

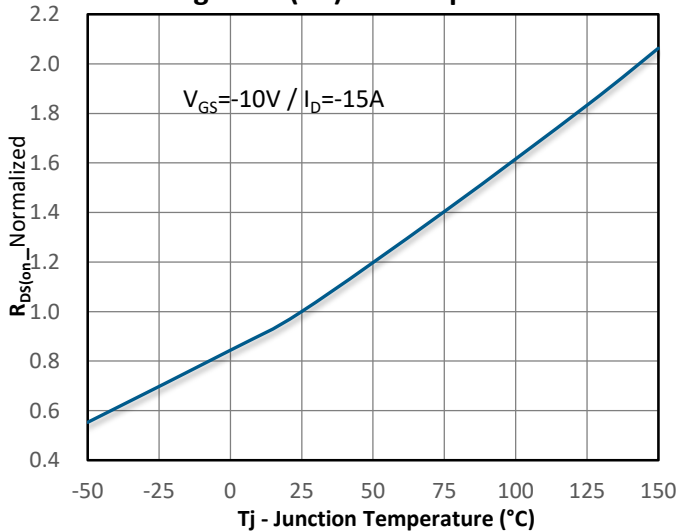
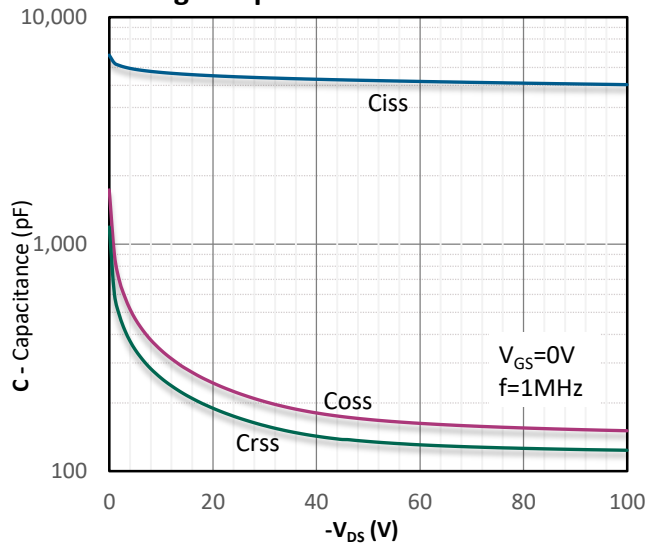


Fig6. Capacitance Characteristics



Typical Characteristics Diagram

Fig7. Gate Charge Characteristics

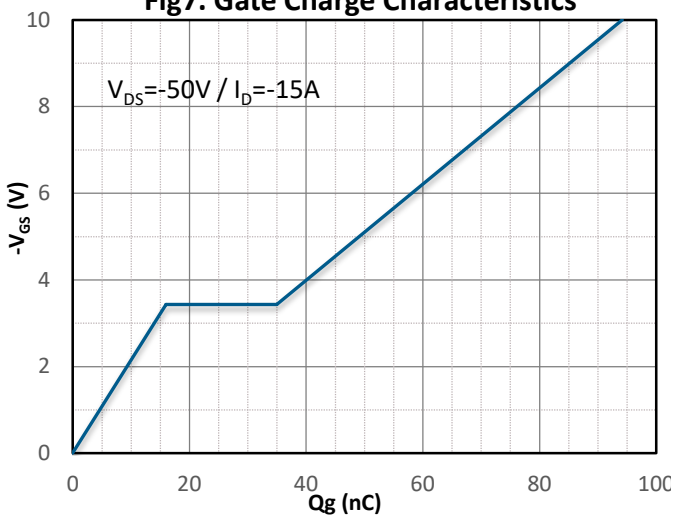


Fig8. Body-diode Forward Characteristics

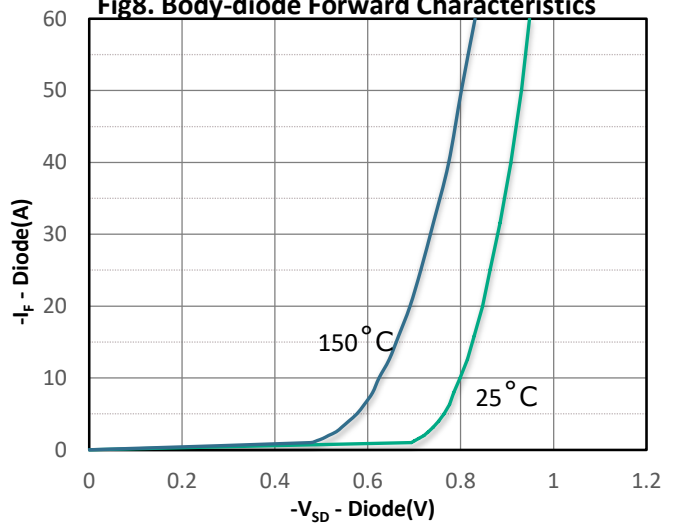


Fig9. Power De-rating

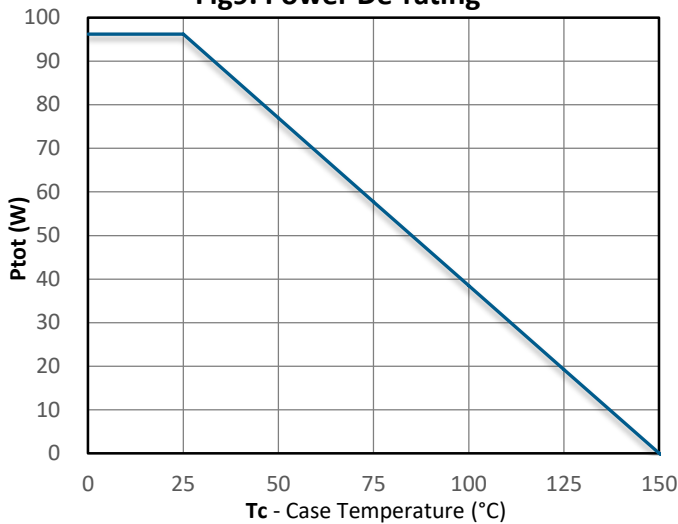


Fig10. Current De-rating

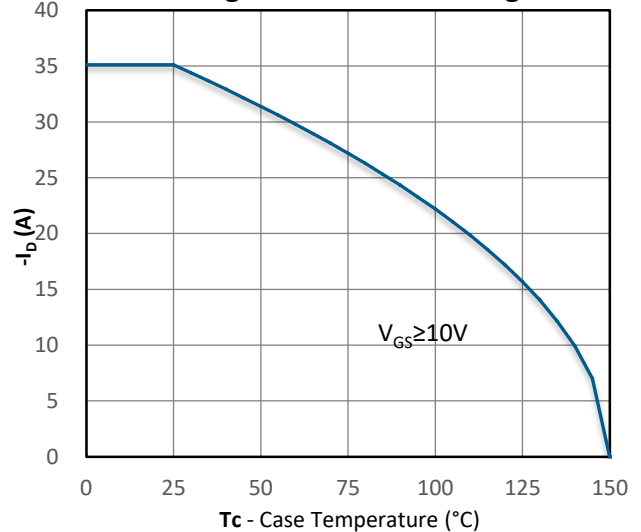


Fig11. Safe Operating Area

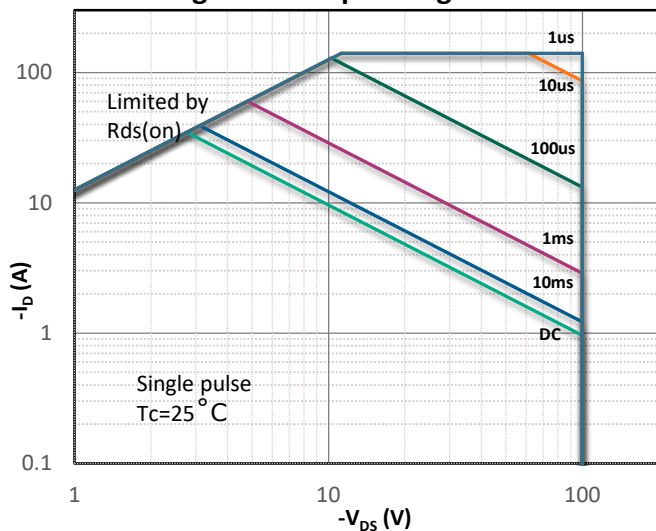
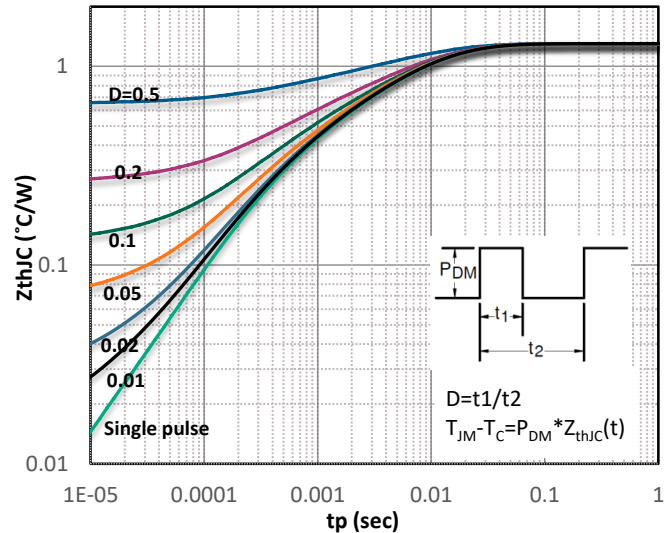
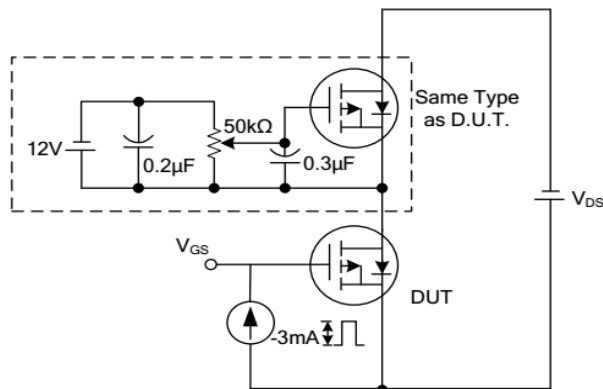


Fig12. Max. Transient Thermal Impedance

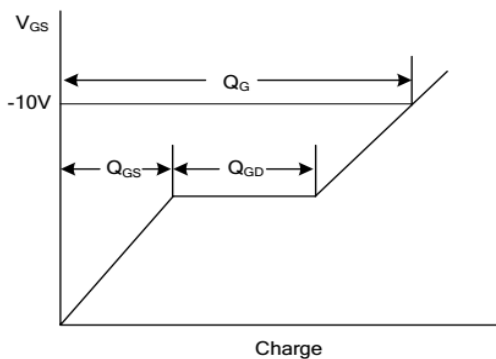


Test Circuit & Waveform

Gate Charge Test Circuit & Waveform

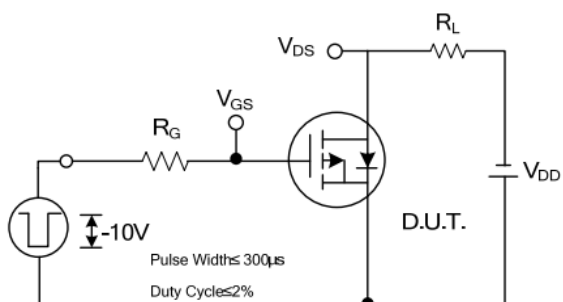


Gate Charge Test Circuit

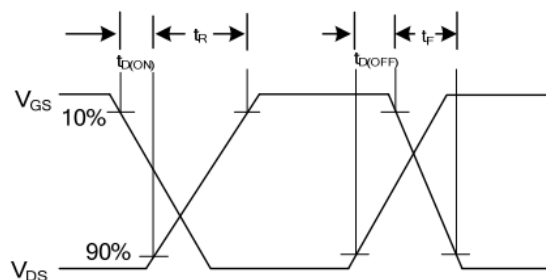


Gate Charge Waveform

MOSFET Switching Test Circuit & Waveform

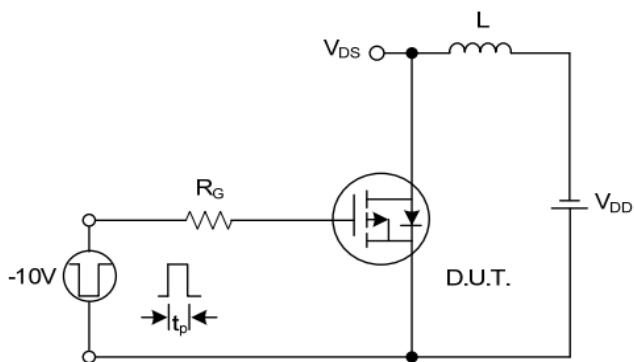


Switching Test Circuit

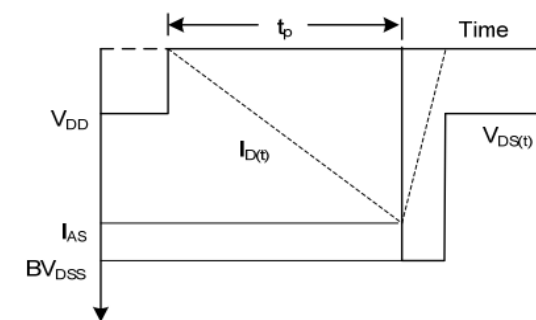


Switching Waveforms

E_{AS} Test Circuit & Waveform



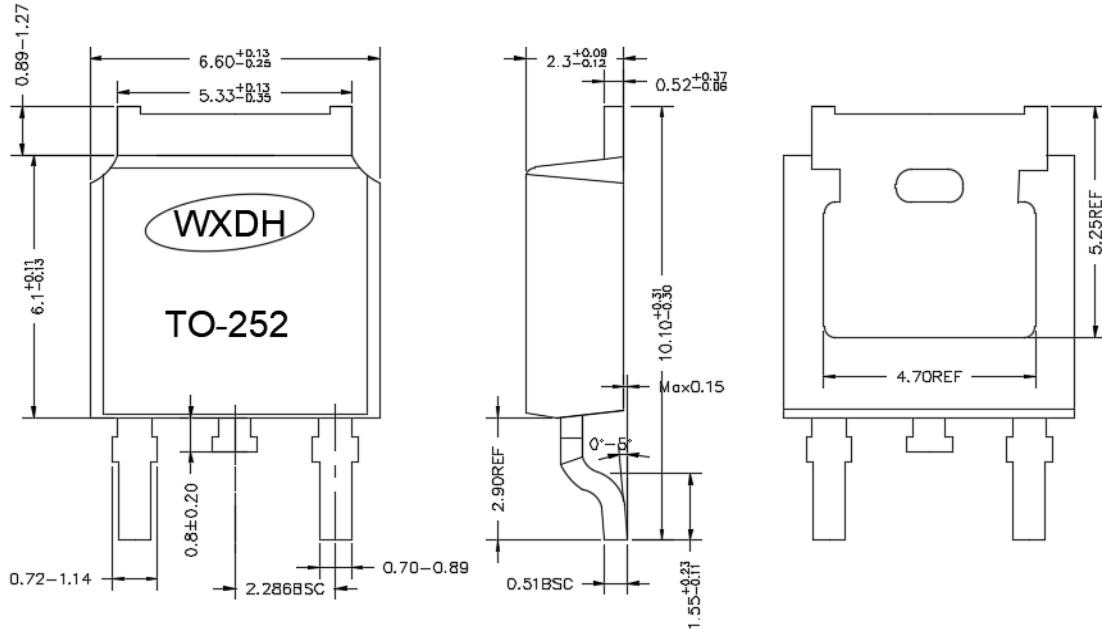
Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

Package Outline : TO-252

*Dimensions in mm



Revision History

Revision	Date	Major changes
1.0	2023/8/16	Release of formal version

Disclaimer

Unless otherwise specified in the datasheet, the product is designed and qualified as a standard commercial product and is not intended for use in applications that require extraordinary levels of quality and reliability, such as aviation, aerospace, life-support devices or systems.

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