

Features

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

Applications

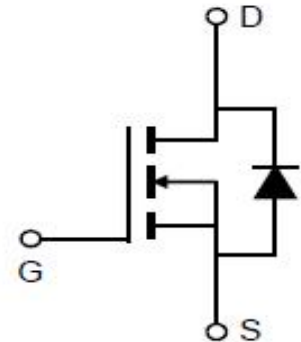
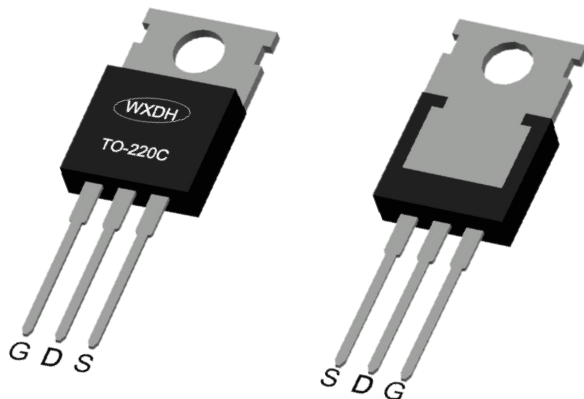
- Power switching applications
- DC-DC converters
- Full bridge control

Key Parameters

V_{DS}	70V
$R_{DS(on)typ.}$	6.3mΩ
I_D	100A
V_{TH}	3V
$C_{iss@10V}$	3475pF
Q_{gd}	21nC



TO-220



Marking & Packing Information

Part #	Package	Marking	Tube/Reel	Qty(pcs)
DH070N07	TO-220	DH070N07	Tube	1000/box

Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Drain-source voltage	V_{DS}	70	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	100 63	A
Pulsed drain current ($T_C = 25^\circ\text{C}$, t_p limited by T_{jmax})	$I_{D\ pulse}$	400	A
Avalanche energy, single pulse ($L=0.5\text{mH}$, $R_g=25\Omega$)	E_{AS}	400	mJ
Power dissipation $T_C = 25^\circ\text{C}$ $T_A = 25^\circ\text{C}$	P_{tot}	114	W
		1.7	W
Operating junction and storage temperature	T_j, T_{stg}	-55...+150	°C

Thermal Resistance

Parameter	Symbol	Max	Unit
Thermal resistance, junction – case.	R_{thJC}	1.10	°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}	70	-	-	V	$V_{GS}=0V, I_D=250\mu A$
Gate threshold voltage	$V_{GS(th)}$	2.0	3.0	4.0	V	$V_{DS}=V_{GS}, I_D=250\mu A$
Zero gate voltage drain current	I_{DSS}	-	-	1	μA	$V_{DS}=68V, V_{GS}=0V$ $T_j=25^\circ\text{C}$
		-	-	100		$T_j=125^\circ\text{C}$
Gate-source leakage current	I_{GSS}	-	-	100	nA	$V_{GS}=20V, V_{DS}=0V$
Drain-source on-state resistance	$R_{DS(on)}$	-	6.3	7.5	mΩ	$V_{GS}=10V, I_D=60A$

Dynamic Characteristic

Parameter	Symbol	Value			Unit	Test Condition
		min.	typ.	max.		
Input Capacitance	C_{iss}	-	3475	-	pF	$V_{GS}=0V, V_{DS}=35V,$ $f=1MHz$
Output Capacitance	C_{oss}	-	238	-		
Reverse Transfer Capacitance	C_{rss}	-	192	-		
Gate Total Charge	Q_G	-	69	-	nC	$V_{GS}=10V, V_{DS}=35V,$ $I_D=30A$
Gate-Source charge	Q_{gs}	-	18	-		
Gate-Drain charge	Q_{gd}	-	21	-		
Turn-on delay time	$t_{d(on)}$	-	14	-	ns	$V_{GS}=10V, V_{DD}=50V,$ $ID=40A, R_{G_ext}=3\Omega$
Rise time	t_r	-	40	-		
Turn-off delay time	$t_{d(off)}$	-	37	-		
Fall time	t_f	-	14	-		

Body Diode Characteristic

Parameter	Symbol	Value			Unit	Test Condition
		min.	typ.	max.		
Diode Max Current	I_S		-	100	A	-
Diode Forward Voltage	V_{SD}	-	-	1.2	V	$V_{GS}=0V, I_{SD}=60A$
Diode Reverse Recovery Time	t_{rr}	-	30	-	ns	$I_F=20A,$ $dI/dt=100A/\mu s$
Diode Reverse Recovery Charge	Q_{rr}	-	37	-	nC	

Typical Characteristics Diagram

Fig1. Output Characteristics

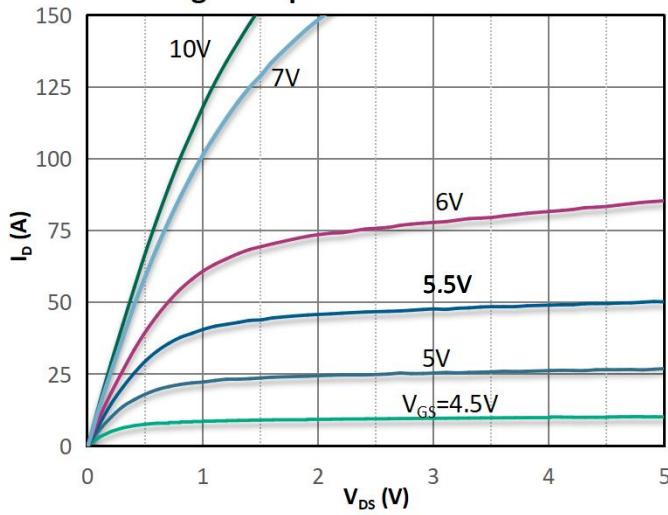


Fig2. Transfer Characteristics

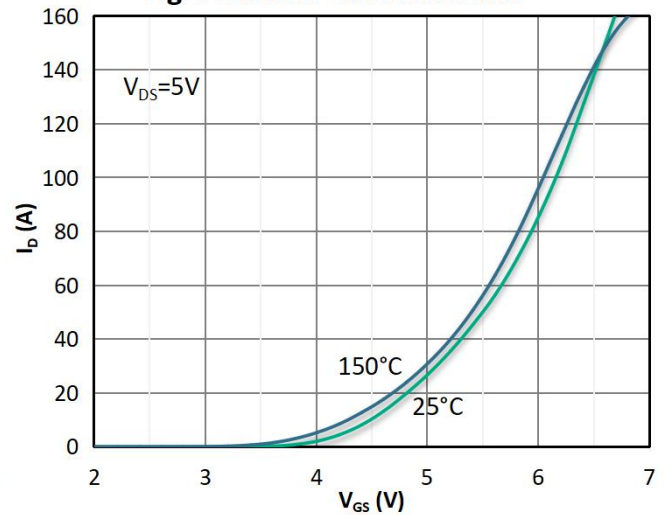


Fig3. Body-diode Forward Characteristics

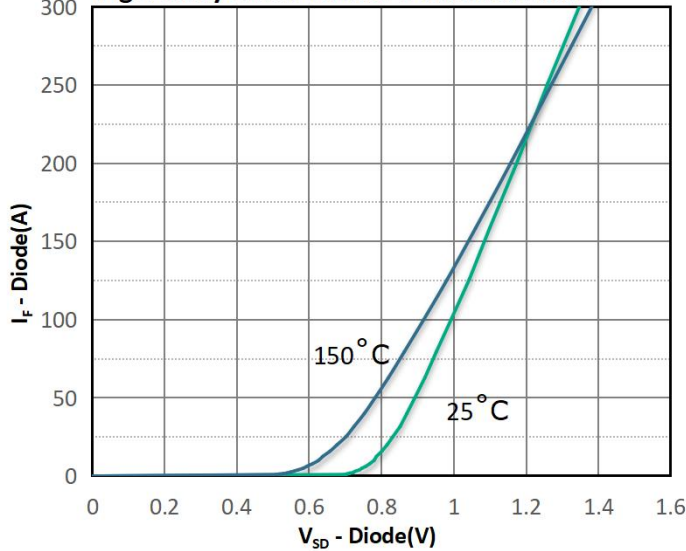


Fig 4. Rds(on) vs Gate Voltage

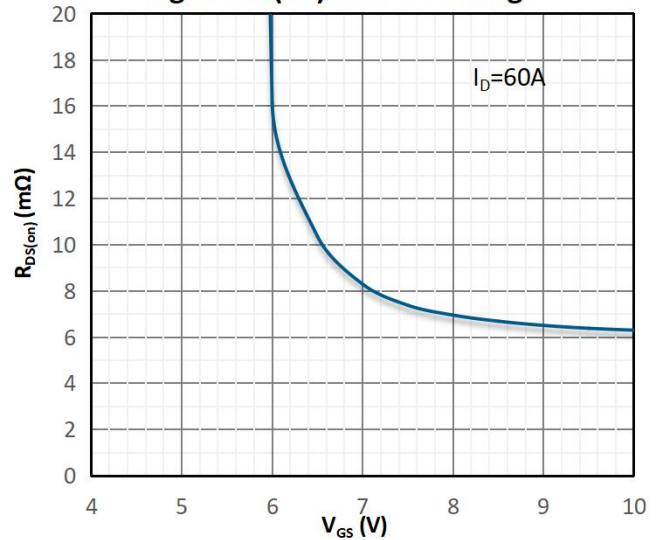


Fig5. Rds(on) vs. Temperature

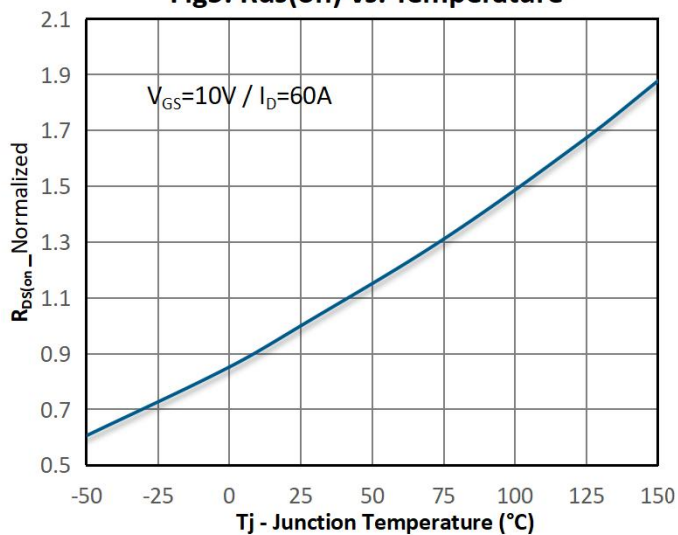
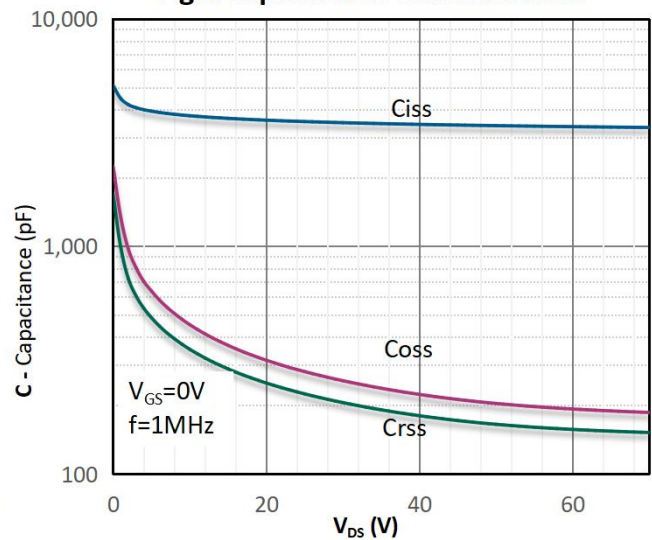


Fig6. Capacitance Characteristics



Typical Characteristics Diagram

Fig7. Gate Charge Characteristics

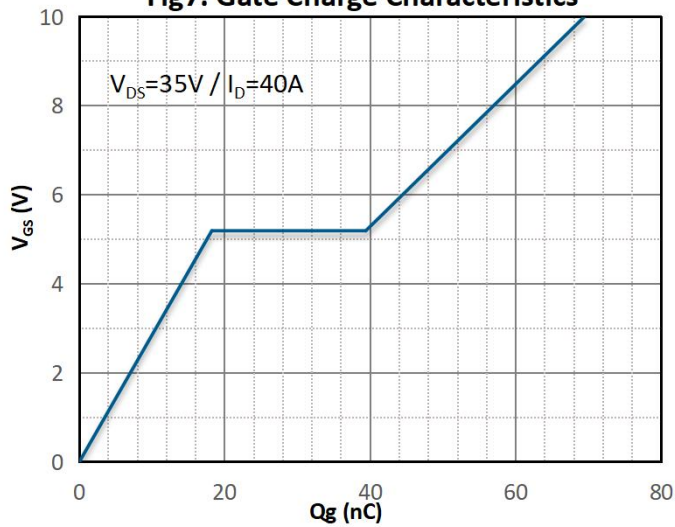


Fig8. Safe Operating Area

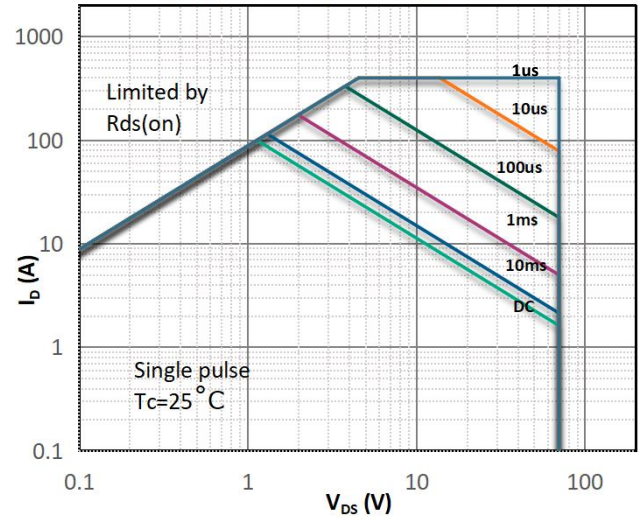


Fig9. Power De-rating

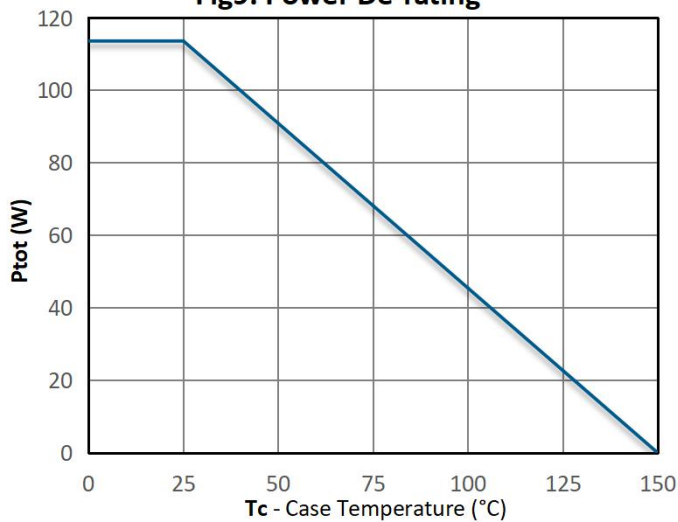


Fig10. Current De-rating

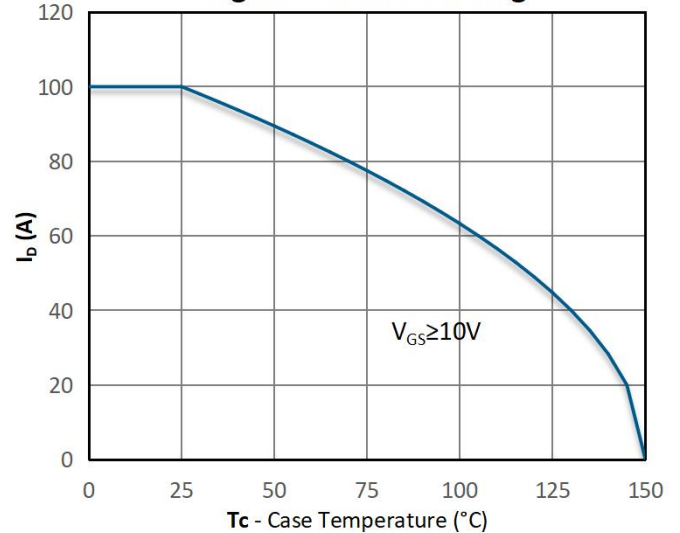
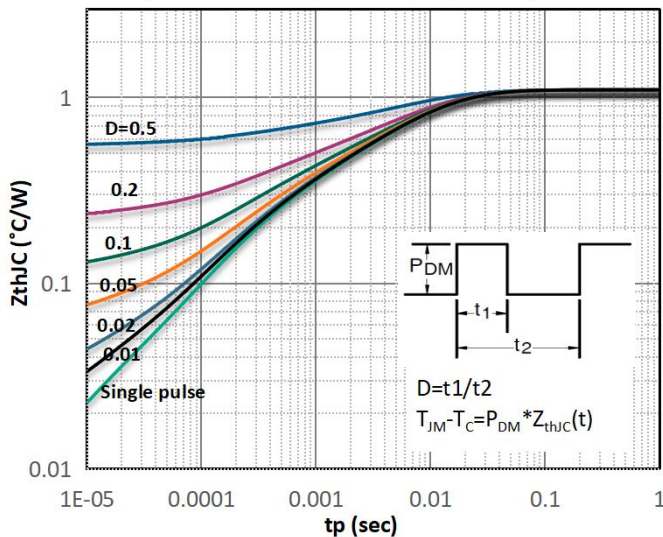
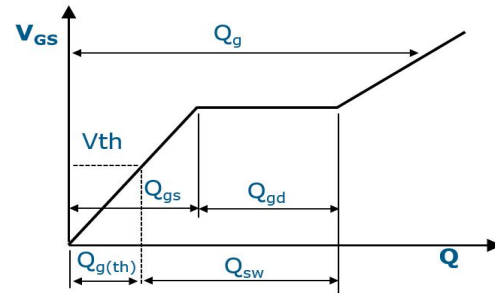
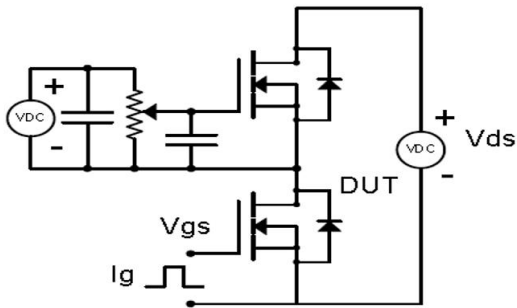


Fig11. Max. Transient Thermal Impedance

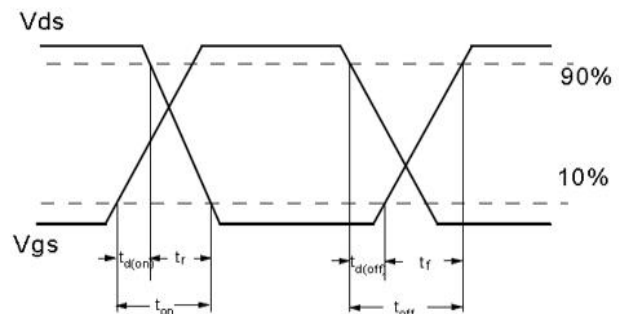
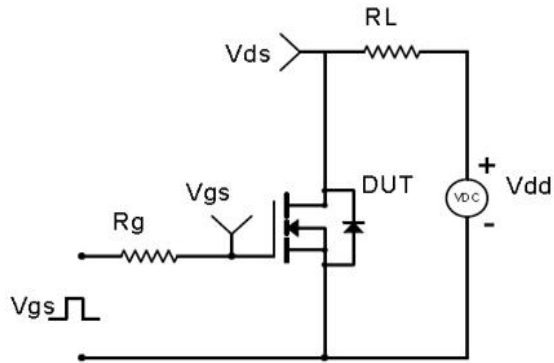


Test Circuit & Waveform

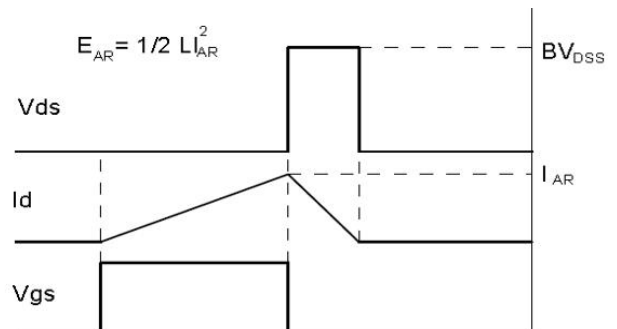
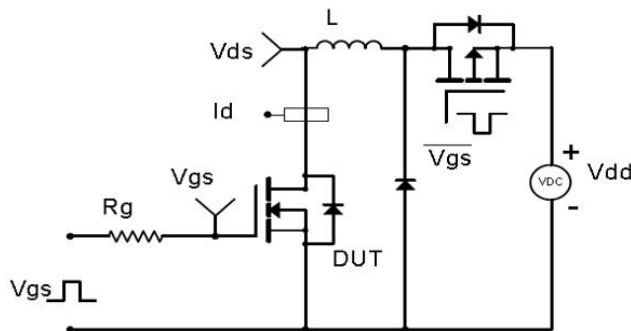
Gate Charge Test Circuit & Waveform



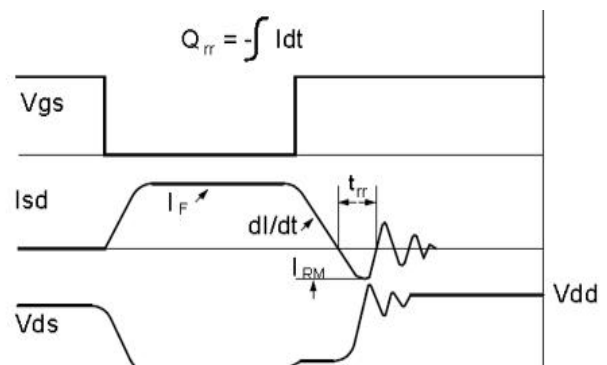
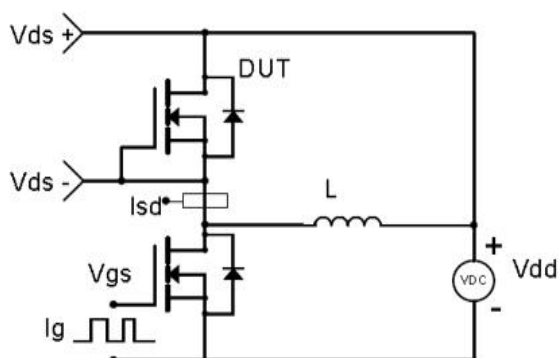
MOSFET Switching Test Circuit & Waveform



EAS Test Circuit & Waveform

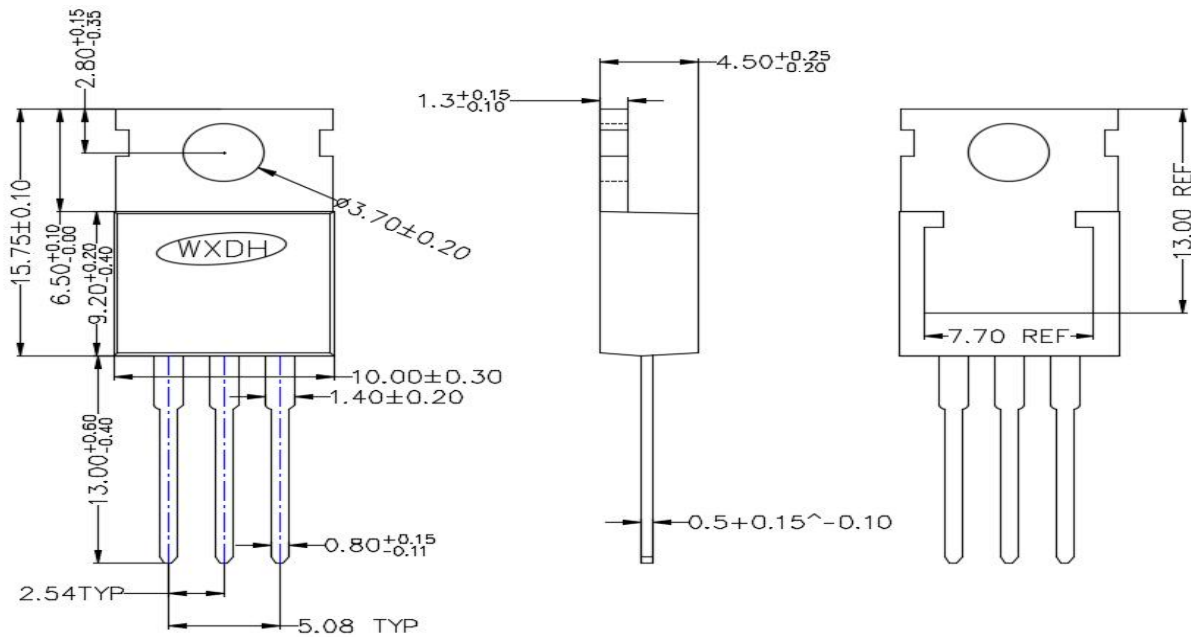


Diode Recovery Test Circuit & Waveform



Package Outline : TO-220

*Dimensions in mm



Revision History

Revision	Date	Major changes
1.0	2023/10/13	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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