DSU035N10N3A

100V/2.9mΩ/190A N-MOSFET

Features

- **AEC-Q101 qualified**
- 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

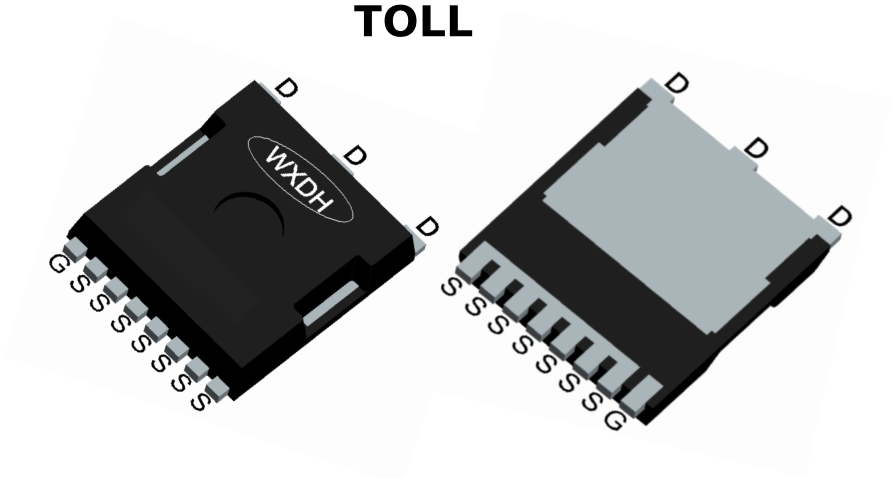
V_{DS}	100V
$R_{DS(on)typ.}$	2.9mΩ
I_D	190A
Ciss@10V	4532pF
Qgd	23nC

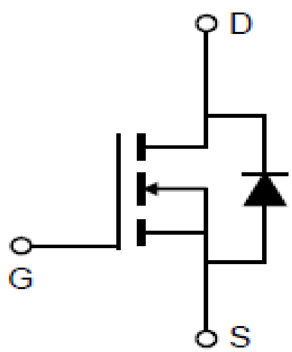
Applications

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

AEC Qualified

TOLL





Marking & Packing Information

Part #	Package	Marking	Tube/Reel	Qty(pcs)
DSU035N10N3A	TOLL	DSU035N10N3A	Tape & Reel	800/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°C T_C = 100°C	I_D	190 134	A
Pulsed drain current (T_C = 25°C, t_p limited by T_{jmax})	$I_{D\ pulse}$	760	A
Avalanche energy, single pulse (L=0.5mH, Rg=25Ω)[1]	E_{AS}	812	mJ
Power dissipation T_C = 25°C	P_{tot}	250	W
Power dissipation T_A = 25°C	P_{tot}	2.3	W
Operating junction and storage temperature	T_j , T_{stg}	-55...+175	°C

Notes:1.EAS was tested at Tj = 25℃, L = 0.5mH, Id=40A.

Thermal Resistance

Parameter	Symbol	Max	Unit
Thermal resistance, junction – case.	R_{thJC}	0.60	°C/W
Thermal resistance, junction – ambient(min. footprint)	R_{thJA}	65	°C/W

Electrical Characteristic (at Tj = 25 °C, unless otherwise specified)

Static Characteristic

Parameter	Symbol	Value min.	Value typ.	Value max.	Unit	Test Condition
Drain-source breakdown voltage	BV_{DSS}	100	-	-	V	V_{GS}=0V, I_D=250uA
Gate threshold voltage	$V_{GS(th)}$	2.0	3.0	4.0	V	V_{DS}=V_{GS},I_D=250uA
Zero gate voltage drain current	I_{DSS}	- -	- -	1 100	μA	V_{DS}=100V,V_{GS}=0V T_j=25°C T_j=125°C
Gate-source leakage current	I_{GSS}	-	-	100	nA	V_{GS}=20V,V_{DS}=0V
Drain-source on-state resistance	$R_{DS(on)}$		2.9	3.5	mΩ	V_{GS}=10V, I_D=70A, Tj=25°C
Transconductance	g_{fs}	-	130	-	S	V_{DS}=5V,I_D=80A

Dynamic Characteristic

Parameter	Symbol	Value			Unit	Test Condition
		min.	typ.	max.		
Input Capacitance	C_{iss}	-	4532	-	pF	V_{GS}=0V, V_{DS}=50V, f=1MHz
Output Capacitance	C_{oss}	-	1452	-		
Reverse Transfer Capacitance	C_{rss}	-	70	-		
Gate Total Charge	Q_G	-	81	-	nC	V_{GS}=10V, V_{DS}=50V, I_D=70A
Gate-Source charge	Q_{gs}	-	25	-		
Gate-Drain charge	Q_{gd}	-	23	-		
Gate plateau voltage	$V_{plateau}$	-	5	-	V	
Turn-on delay time	$t_{d(on)}$	-	20	-	ns	V_{GS}=10V, V_{DD}=50V, I_D=90A， R_{G_ext}=3Ω
Rise time	t_r	-	41	-		
Turn-off delay time	$t_{d(off)}$	-	44	-		
Fall time	t_f	-	26	-		

Body Diode Characteristic

Parameter	Symbol	Value			Unit	Test Condition
		min.	typ.	max.		
Diode Max Current	I_S		-	190	A	-
Diode Forward Voltage	V_{SD}	-	-	1.2	V	V_{GS}=0V,I_{SD}=60A
Diode Reverse Recovery Time	t_{rr}	-	64	-	ns	I_F=60A, dI/dt=100A/μs
Diode Reverse Recovery Charge	Q_{rr}	-	95	-	nC	

Typical Characteristics Diagram

Fig1. Output Characteristics

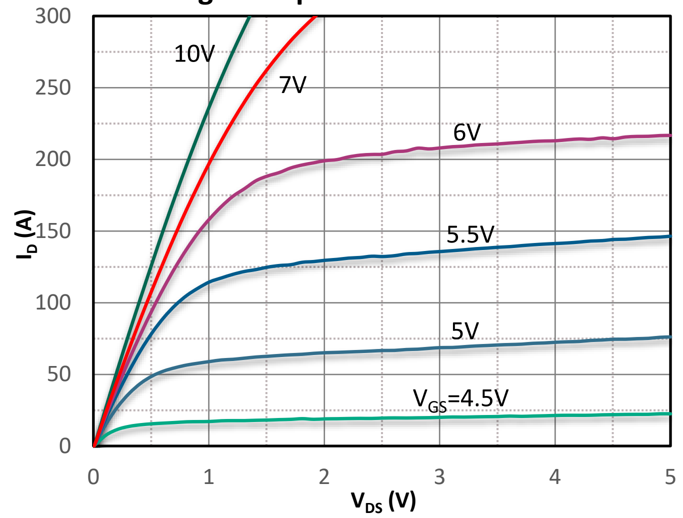


Fig2. Transfer Characteristics

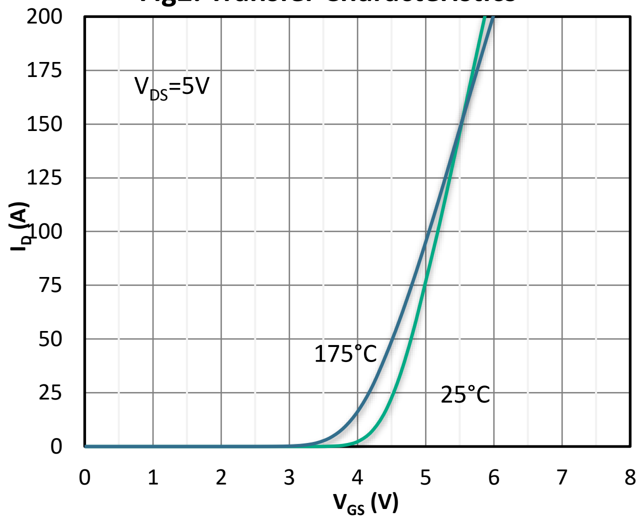


Fig3. Rds(on) vs Drain Current

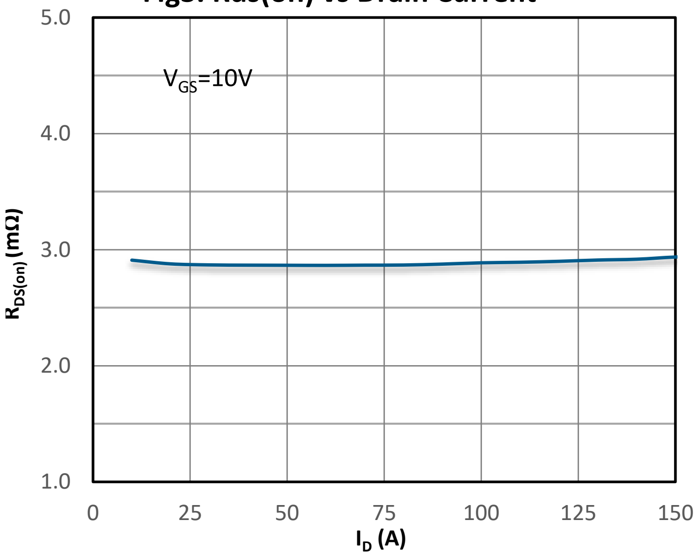


Fig 4. Rds(on) vs Gate Voltage

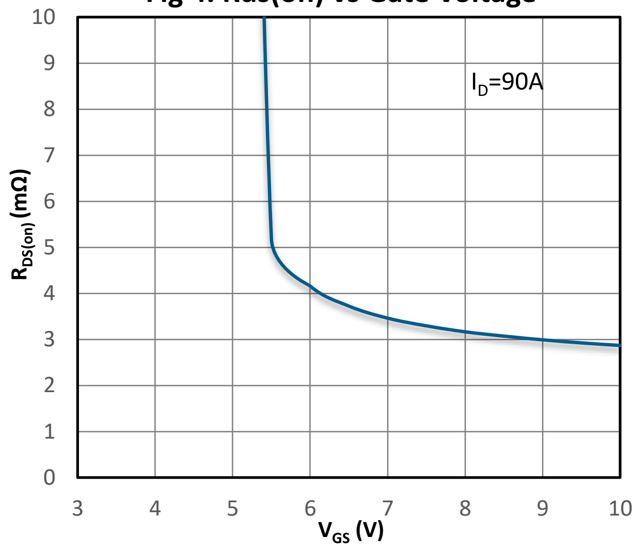


Fig5. Rds(on) vs. Temperature

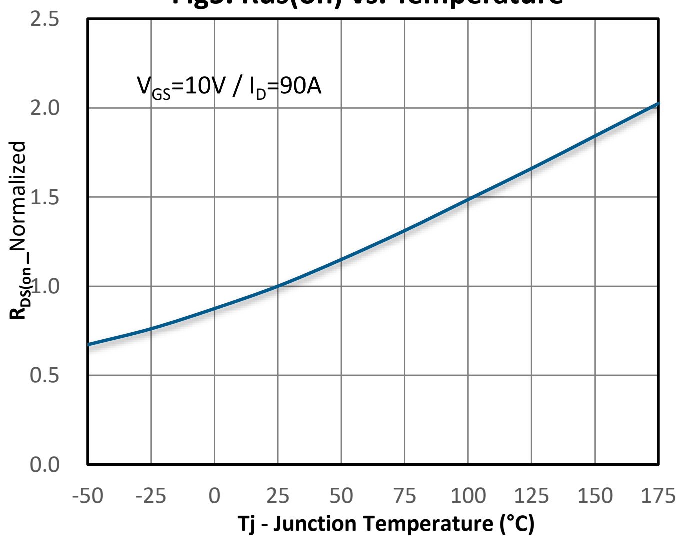
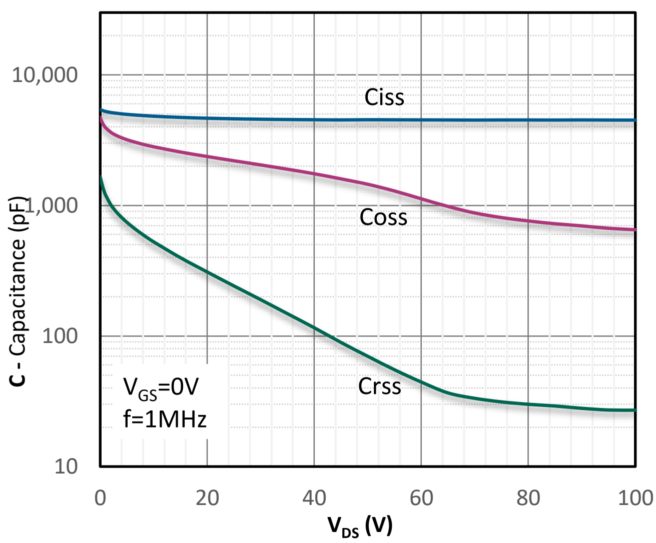


Fig6. Capacitance Characteristics



Typical Characteristics Diagram

Fig7. Gate Charge Characteristics

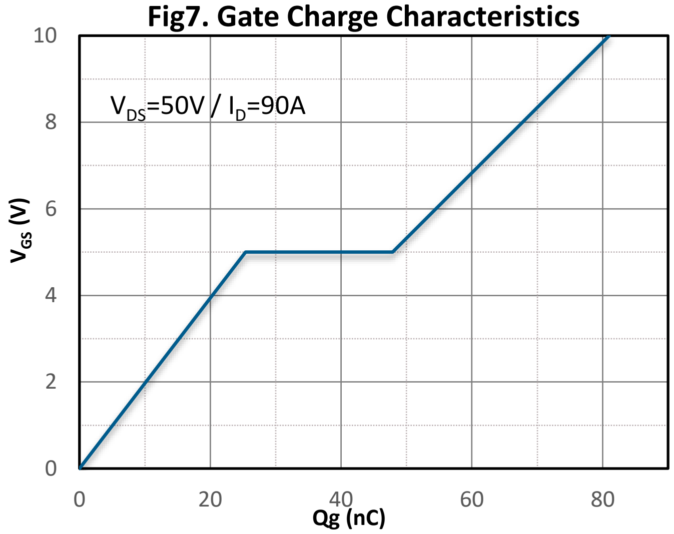


Fig8. Body-diode Forward Characteristics

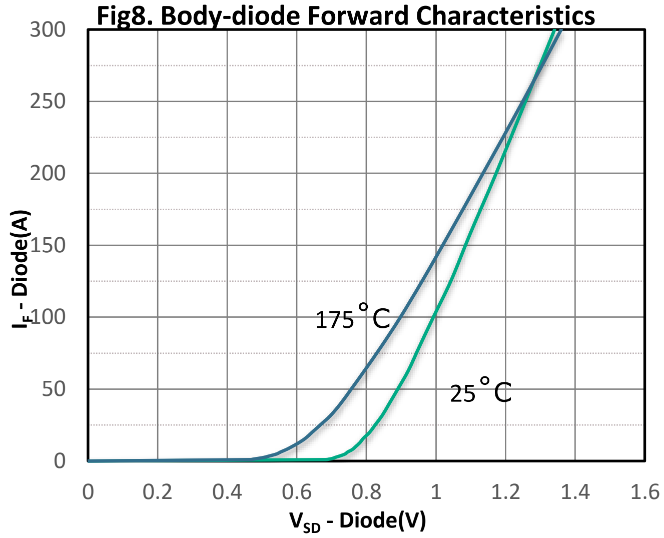


Fig9. Power De-rating

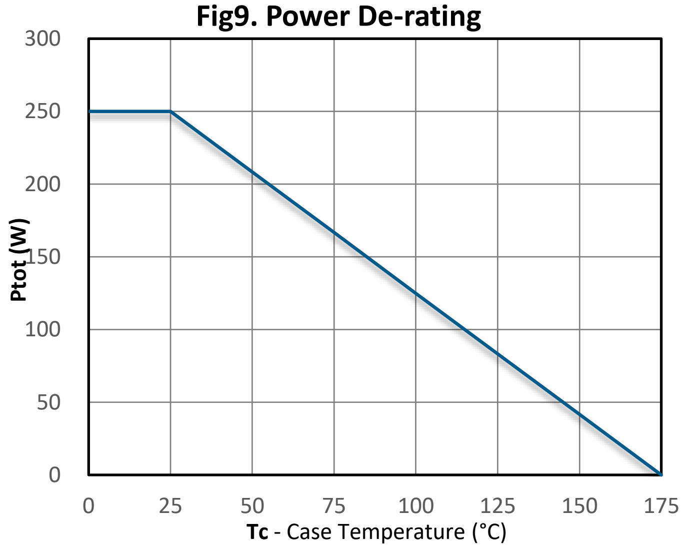


Fig10. Current De-rating

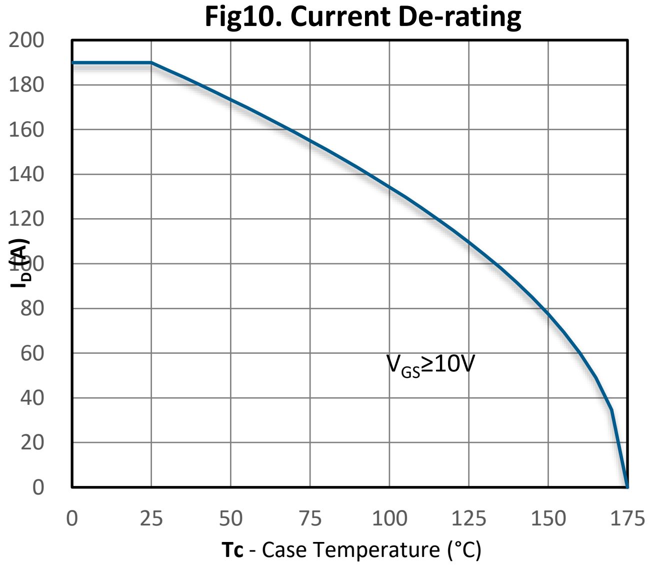


Fig11. Safe Operating Area

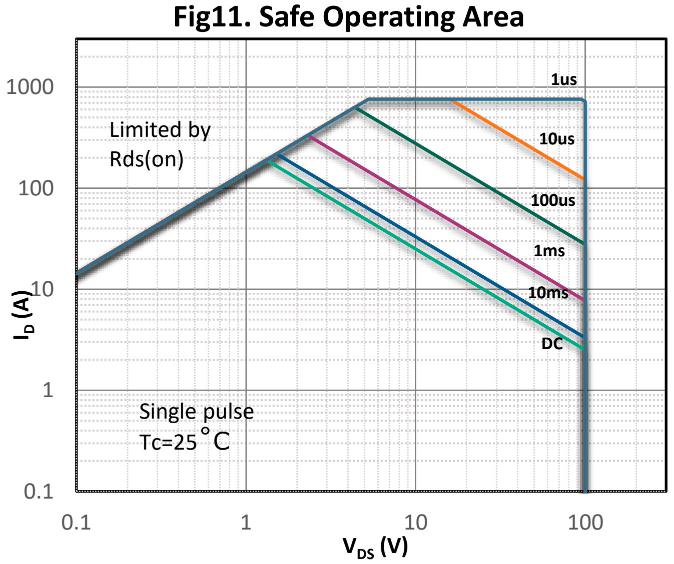
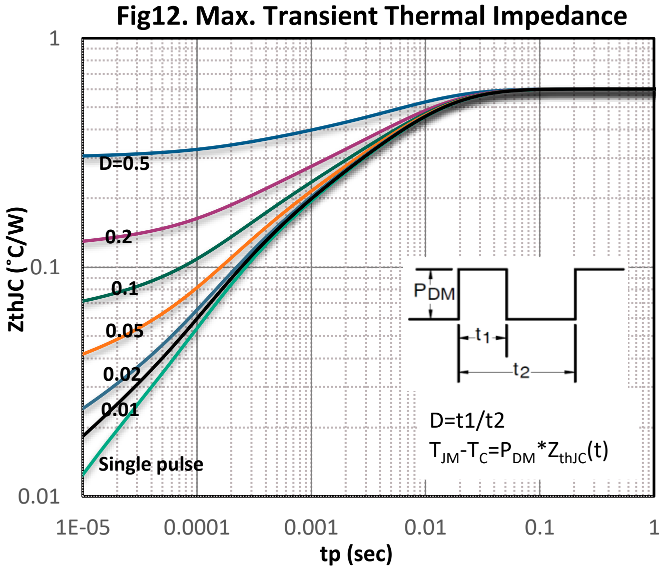
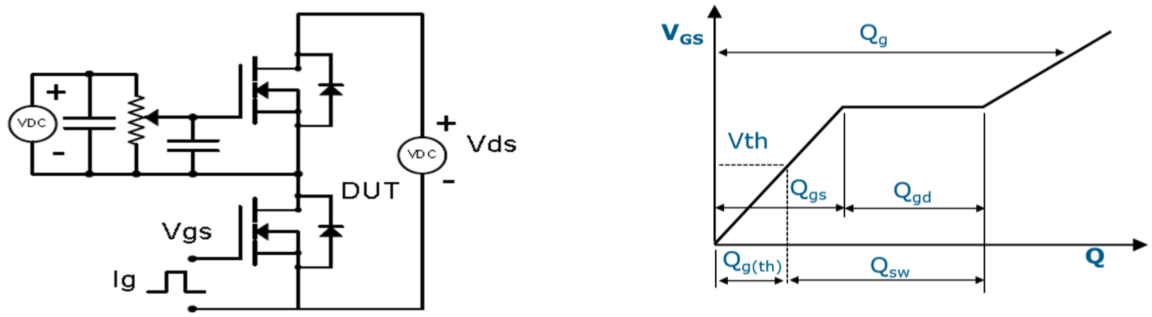


Fig12. Max. Transient Thermal Impedance

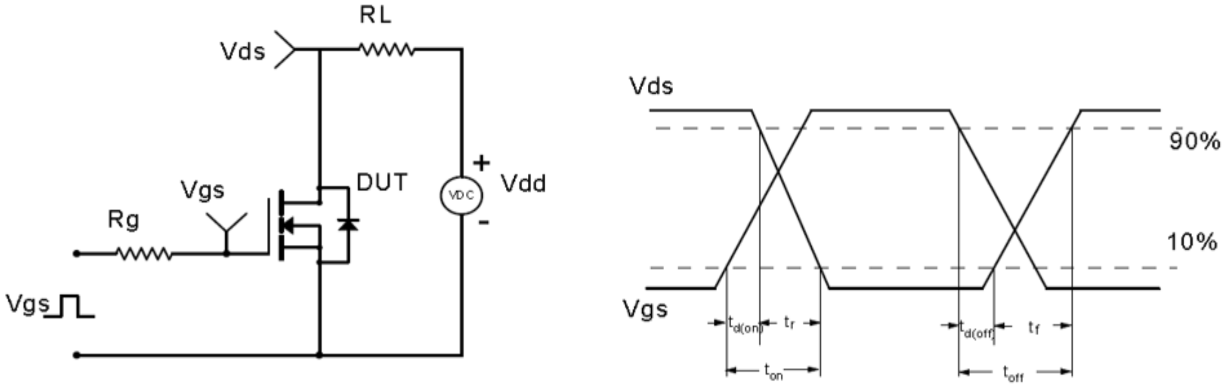


Test Circuit & Waveform

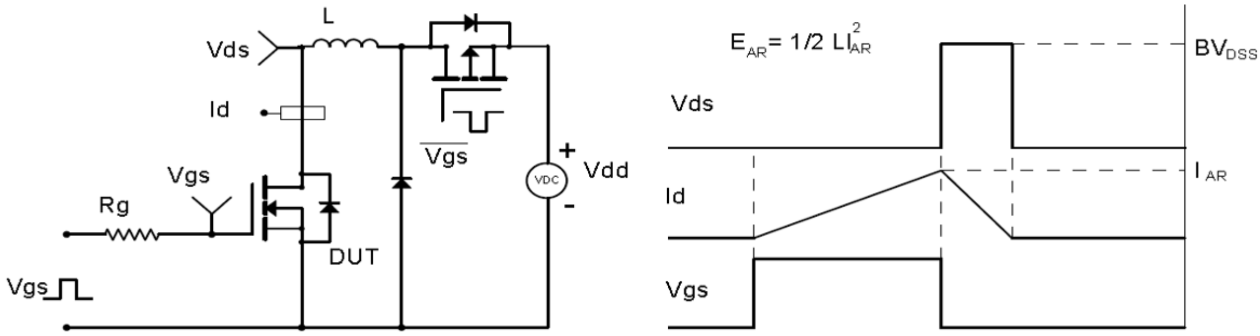
Gate Charge Test Circuit & Waveform



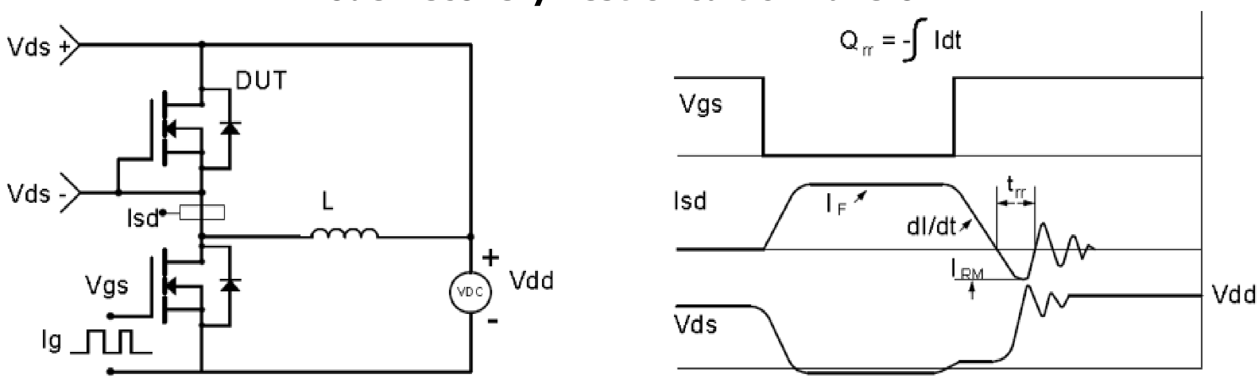
MOSFET Switching Test Circuit & Waveform



E_{AS} Test Circuit & Waveform

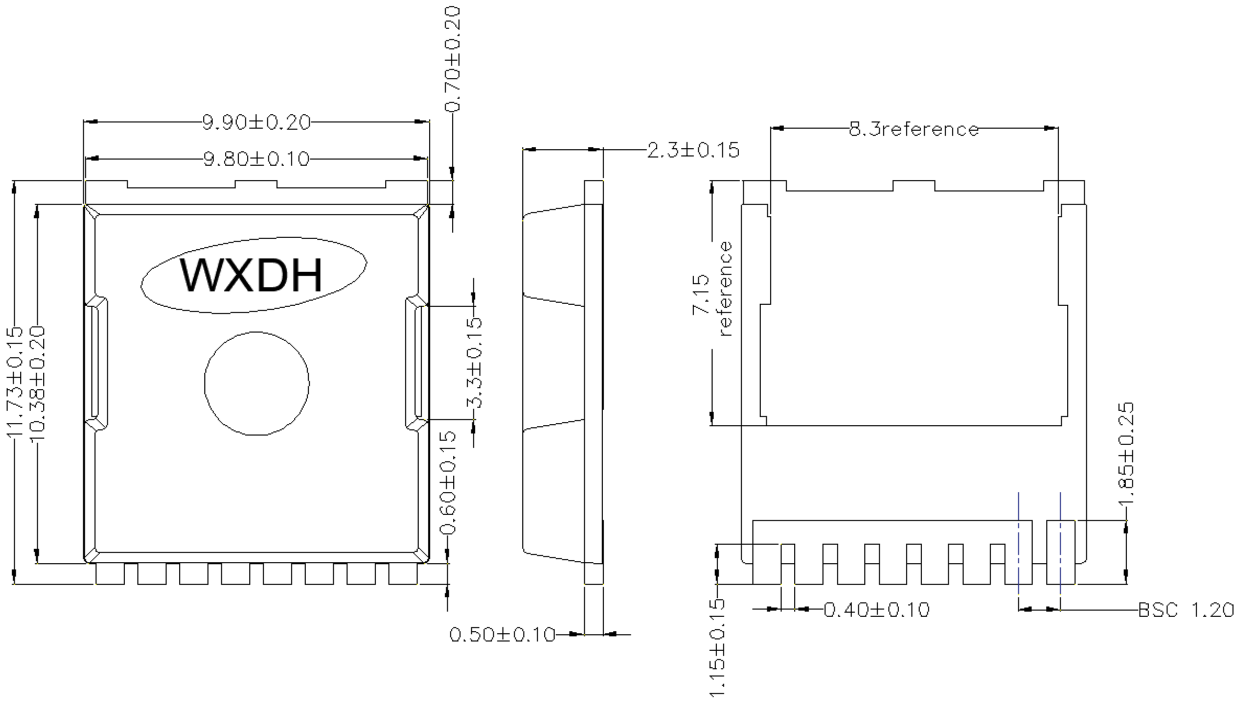


Diode Recovery Test Circuit & Waveform



Package Outline : TOLL

*Dimensions in mm



Revision History

Revison	Date	Major changes
1.0	2023/10/28	Release of formal version

Disclaimer

Unless otherwise specified in the datasheet, the product is designed and qulified 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.

Any and all semicondutor products have certain probability to fail or malfunction, which may result in personal injury, death or property damage. Customer are responsible for providing adequate safe measures when design their systems.

DONGHAI Semiconductor reserves the right to improve product design, function, reliability without notice.