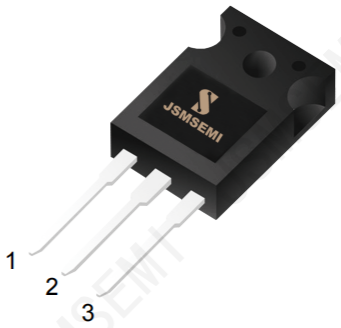
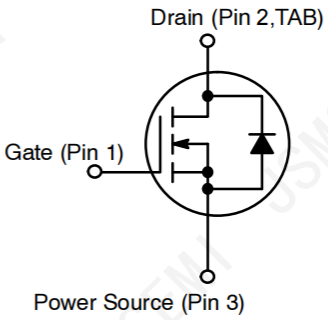
Product Summary

- V_{DS} 1500V
- I_D 3A
- $R_{DS(ON)}$(at V_{GS}=10V) ＜4.5Ω
- 100% EAS Tested
- 100% ▽V_{DS} Tested



General Description

- Vertical Double-diffused MOSFET technology
- Excellent package for heat dissipation
- High density cell design for low $R_{DS(ON)}$
- Moisture Sensitivity Level 1
- Epoxy Meets UL 94 V-0 Flammability Rating
- Halogen Free



Applications

- Power switching application
- Uninterruptible power supply
- DC-DC convertor
- Motor drivers

Absolute Maximum Ratings T_C= 25℃, unless otherwise noted

Parameter	Symbol	Value	Unit
		TO-247	
Drain-Source Voltage (V_{GS}= 0V)	V_{DSS}	1500	V
Continuous Drain Current V_{GS} = 10V T_C = 25℃	I_D	3	A
Pulsed Drain Current (note1)	I_{DM}	12	A
Gate-Source Voltage	V_{GSS}	±30	V
Single Pulse Avalanche Energy (note2)	E_{AS}	230.2	mJ
Avalanche Current (note1)	I_{AS}	19.8	A
Repetitive Avalanche Energy (note1)	E_{AR}	1176.1	mJ
Power Dissipation (T_C = 25℃)	P_D	65	W
Peak Diode Recovery dv/dt (note1)	dv/dt	5.0	
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55~+150	℃

Thermal Resistance

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-Case	R_{thJC}	3.8	℃/W
Thermal Resistance, Junction-to-Ambient	R_{thJA}	67.3	

Specifications T_J = 25ºC, unless otherwise noted

Parameter	Symbol	Test Conditions	Value			Unit
			Min.	Typ.	Max.	
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250μA	1500	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 1500V, V_{GS} = 0V, T_J = 25ºC	--	--	1	μA
		V_{DS} = 1200V, V_{GS} = 0V, T_J = 125ºC	--	--	100	
Gate-Source Leakage	I_{GSS}	V_{GS} = ±30V	--	--	±100	nA
Gate-Source Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS} , I_D = 250μA	3.0	--	4.5	V
Drain-Source On-Resistance (Note3)	$R_{DS(on)}$	V_{GS} = 10V, I_D = 3A	3.5	4.0	4.5	Ω
Dynamic						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 25V, f = 1.0MHz	--	1780	--	pF
Output Capacitance	C_{oss}		--	83	--	
Reverse Transfer Capacitance	C_{rss}		--	5.1	--	
Total Gate Charge	Q_g	V_{DD} 750V, I_D = 3A, V_{GS} = 10V	--	30	--	nC
Gate-Source Charge	Q_{gs}		--	8	--	
Gate-Drain Charge	Q_{gd}		--	17	--	
Turn-on Delay Time	$t_{d(on)}$	VDD = 750V, ID = 3A, RG = 10 Ω, VGS = 10V	--	35	--	ns
Turn-on Rise Time	t_r		--	12	--	
Turn-off Delay Time	$t_{d(off)}$		--	50	--	
Turn-off Fall Time	t_f		--	32	--	
Drain-Source Body Diode Characteristics						
Continuous Body Diode Current	I_S	T_C = 25 °C	--	--	3	A
Pulsed Diode Forward Current	I_{SM}		--	--	12	
Body Diode Voltage	V_{SD}	T_J = 25ºC, I_{SD} = 3A, V_{GS} = 0V	--	--	1.0	V
Reverse Recovery Time	t_{rr}	V_{GS} = 0V, I_S = 3A, di_F/dt = 100A/μs	--	560	--	ns
Reverse Recovery Charge	Q_{rr}		--	5.61	--	μC

Notes
1. Repetitive Rating: Pulse width limited by maximum junction temperature
2. L = 10mH, VDD = 50V, RG = 25 Ω, Starting TJ = 25 ºC
3. Pulse Test: Pulse width ≤ 300μs, Duty Cycle ≤ 1%

Ordering Information

Order number	Package	Marking	Operation Temperature Range	MSL Grade	Ship,Quantity	Green
IXTH3N150-JSM	TO-247S	JSM3N150P	-55 to 150°C	1	TUBE,450	Rohs

Typical Characteristics T_J = 25ºC, unless otherwise noted

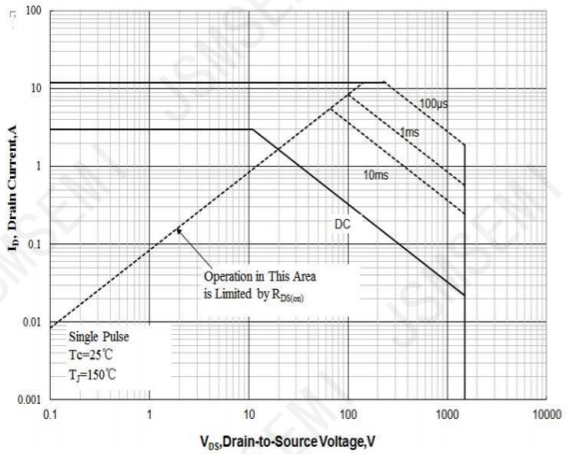


Figure 1 Maximum Forward Bias Safe Operating Area

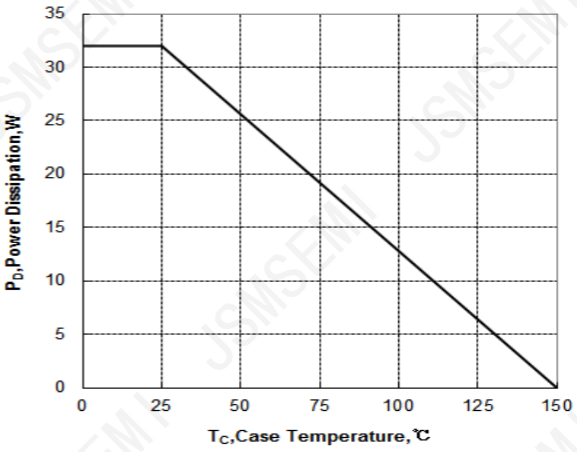


Figure 2 Maximum Power dissipation vs Case Temperature

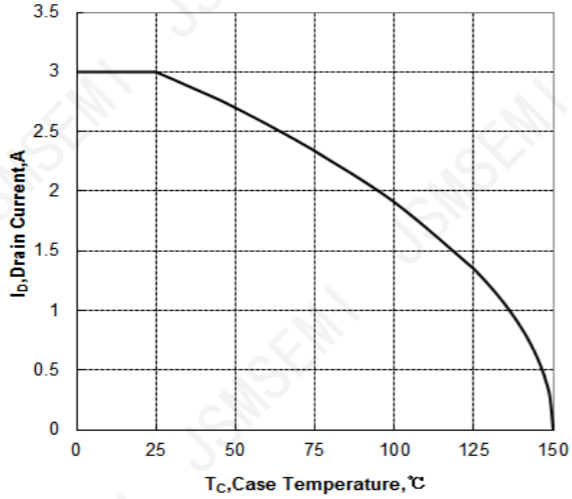


Figure 3 Maximum Continuous Drain Current vs Case Temperature

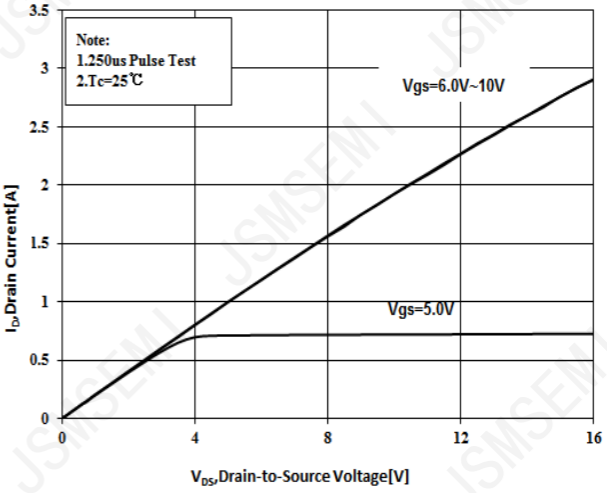


Figure 4 Typical Output Characteristics

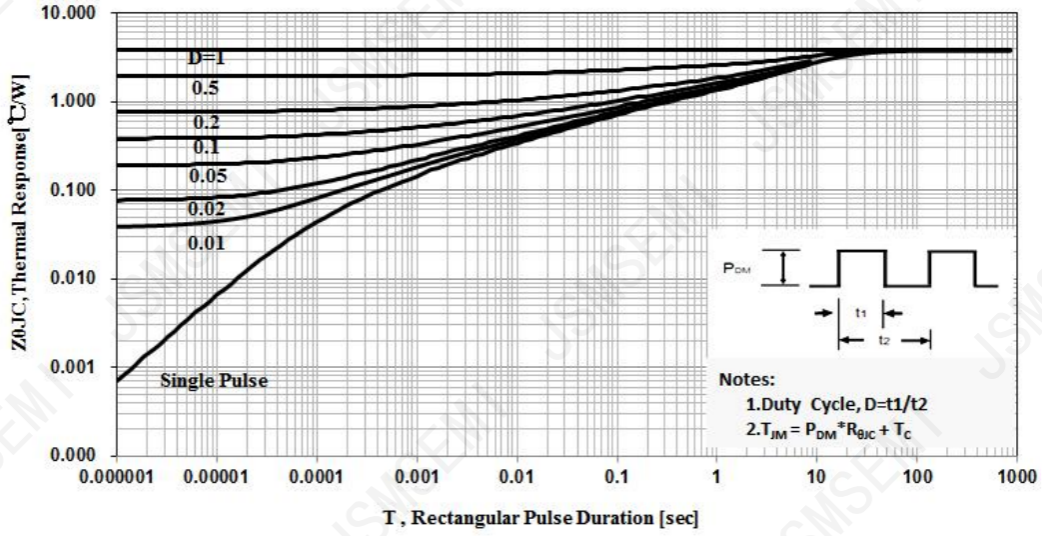


Figure 5 Maximum Effective Thermal Impedance , Junction to Case

Typical Characteristics T_J = 25ºC, unless otherwise noted

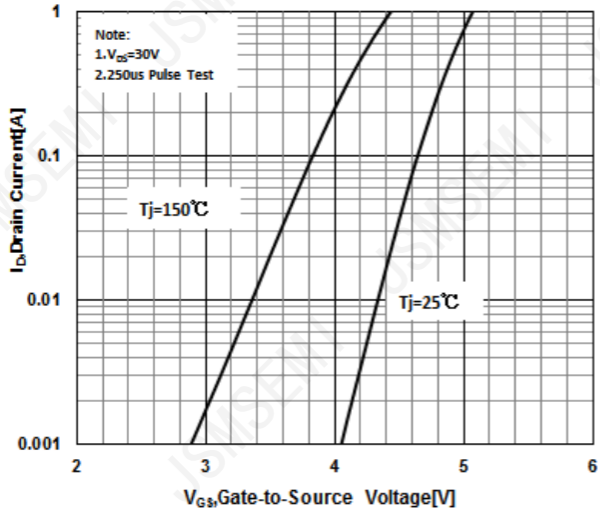


Figure 6 Typical Transfer Characteristics

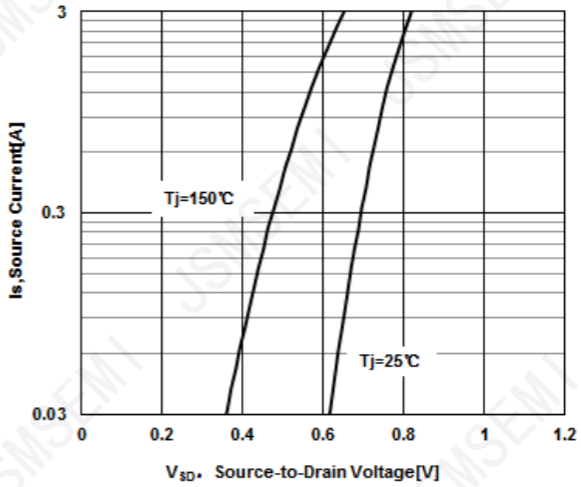


Figure 7 Typical Body Diode Transfer Characteristics

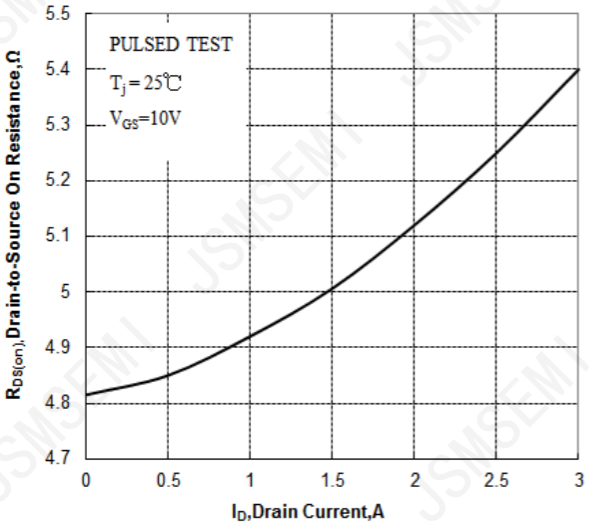


Figure 8 Typical Drain to Source ON Resistance vs Drain Current

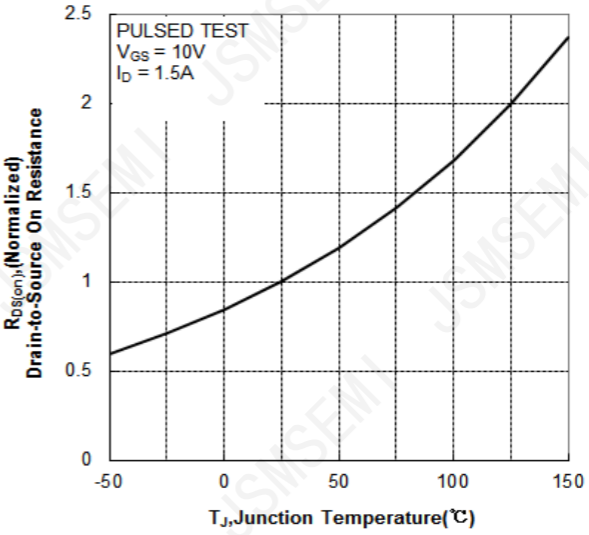


Figure 9 Typical Drian to Source on Resistance vs Junction Temperature

Figure A: Gate Charge Test Circuit and Waveform

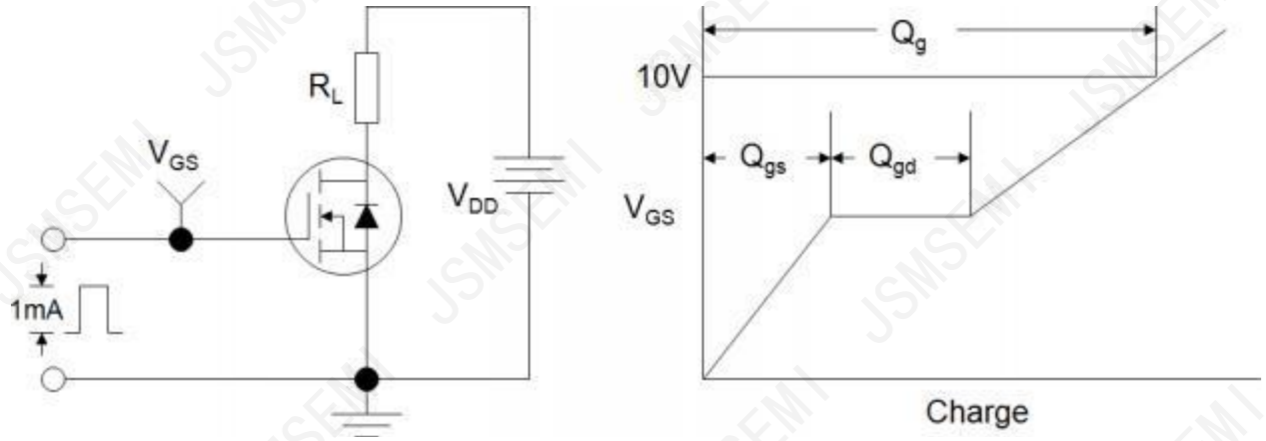


Figure B : Resistive Switching Test Circuit and Waveform

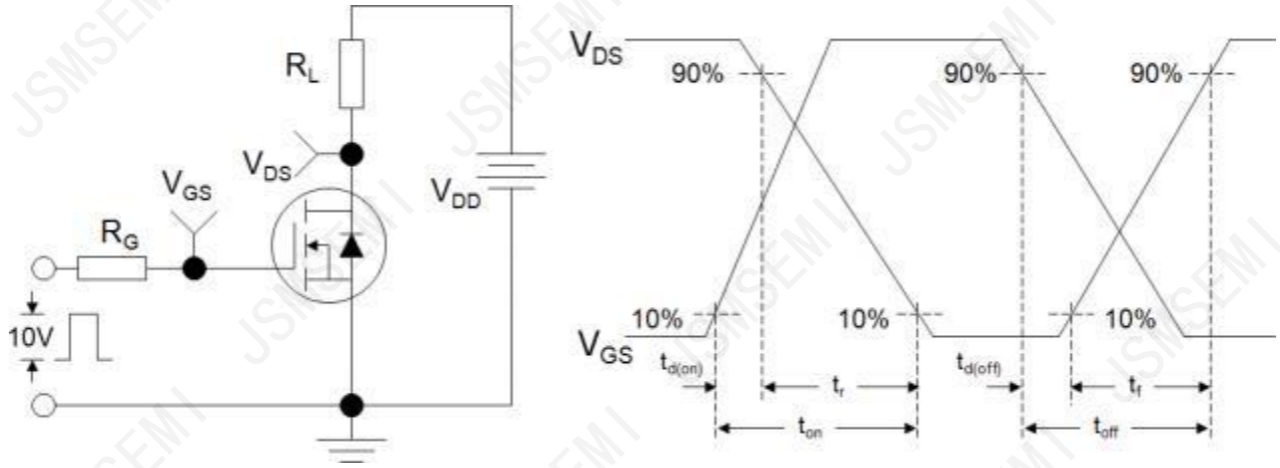
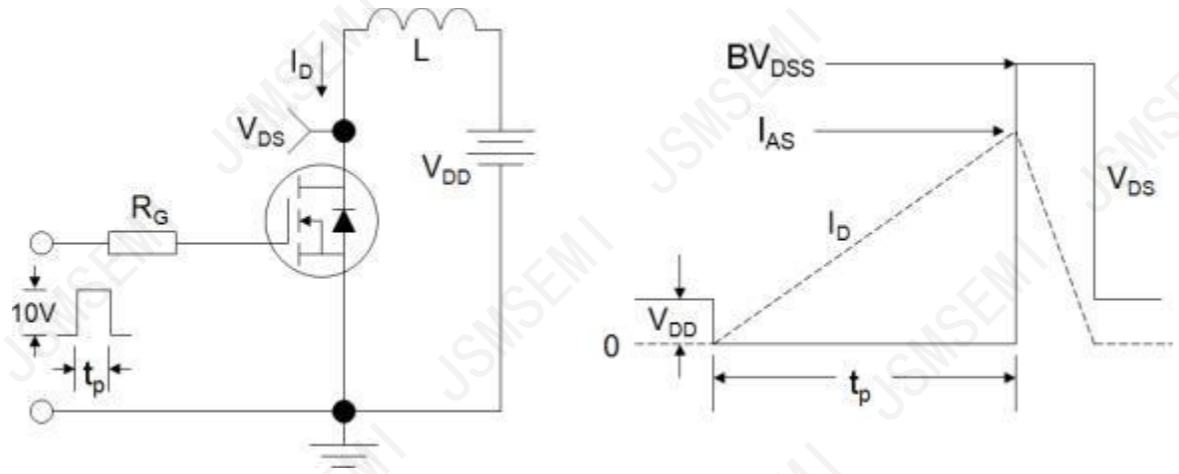
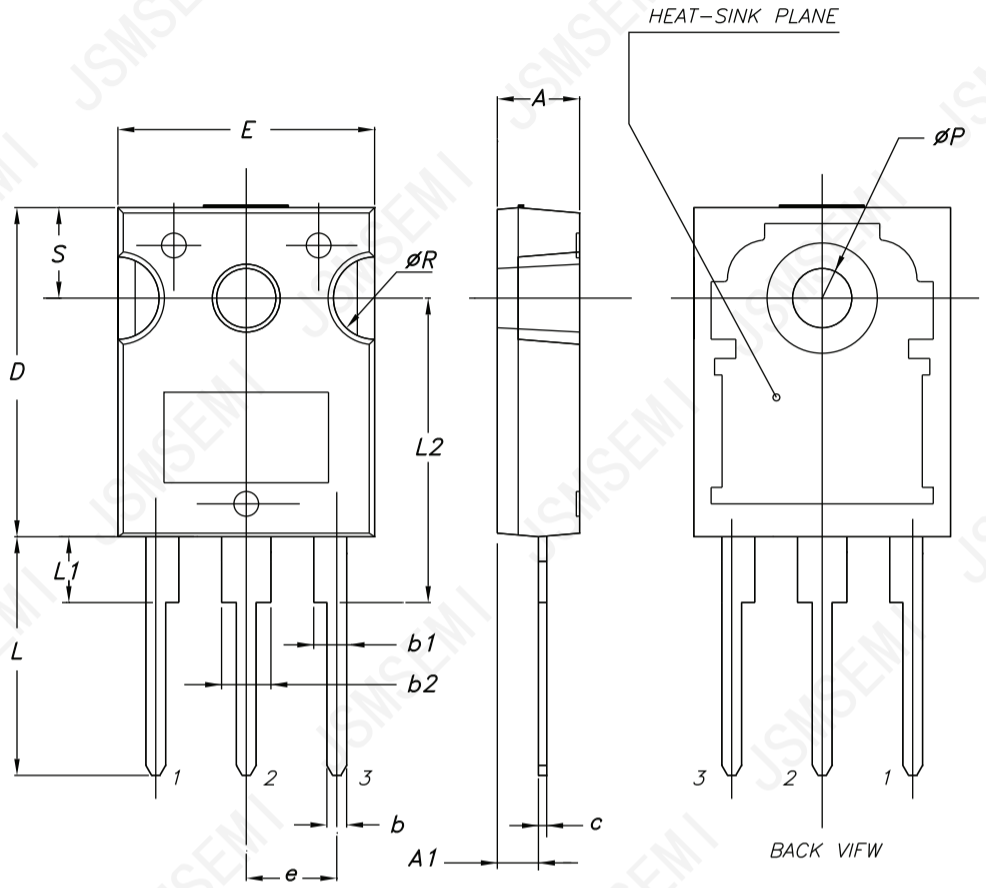


Figure C : Unclamped Inductive Switching Test Circuit and Waveform



Package Information

TO-247S



Dim.	mm.		
	Min.	Typ.	Max.
A	4.85		5.15
A1	2.20		2.60
b	1.0		1.40
b1	2.0		2.40
b2	3.0		3.40
c	0.40		0.80
D	19.85		20.15
E	15.45		15.75
e	5.30	5.45	5.60
L	14.20		14.80
L1	3.70		4.30
L2		18.50	
ØP	3.55		3.65
ØR	4.50		5.50
S	5.30	5.50	5.70

Revision History

Rev.	Change	Date
V1.0	Initial version	6/27/2020

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