

Product Summary

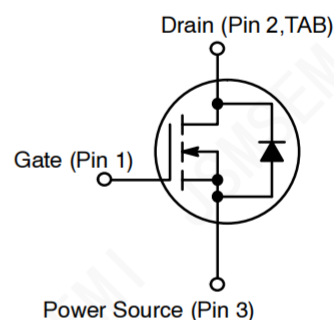
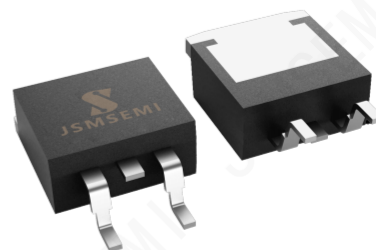
- V_{DS} 150V
- I_D 35A
- $R_{DS(ON)}$ (at $V_{GS}=10V$) $<50m\Omega$
- 100% EAS Tested
- 100% ∇V_{DS} Tested

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 $T_C = 25^\circ\text{C}$, unless otherwise noted			
Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DSS}	150	V
Continuous Drain Current	I_D	35	A
Pulsed Drain Current (note1)	I_{DM}	140	A
Gate-Source Voltage	V_{GSS}	± 20	V
Single Pulse Avalanche Energy (note1)	E_{AS}	191	mJ
Avalanche Current (note1)	I_{AS}	31	A
Repetitive Avalanche Energy (note1)	E_{AR}	124	mJ
Power Dissipation ($T_C = 25^\circ\text{C}$)	P_D	160	W
Operating Junction and Storage Temperature Range	T_J, T_{stg}	$-55\sim+150$	$^\circ\text{C}$

Thermal Resistance			
Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-Case	R_{thJC}	1.2	$^\circ\text{C/W}$
Thermal Resistance, Junction-to-Ambient	R_{thJA}	60	

Specifications $T_J = 25^{\circ}\text{C}$, unless otherwise noted						
Parameter	Symbol	Test Conditions	Value			Unit
			Min.	Typ.	Max.	
Static						
Drain-Source Breakdown Voltage	$V_{(\text{BR})\text{DSS}}$	$V_{\text{GS}} = 0\text{V}, I_{\text{D}} = 250\mu\text{A}$	220	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{\text{DS}} = 220\text{V}, V_{\text{GS}} = 0\text{V}, T_J = 25^{\circ}\text{C}$	--	--	1	μA
		$V_{\text{DS}} = 220\text{V}, V_{\text{GS}} = 0\text{V}, T_J = 125^{\circ}\text{C}$	--	--	100	
Gate-Source Leakage	I_{GSS}	$V_{\text{GS}} = \pm 20\text{V}, V_{\text{DS}} = 0\text{V}$	--	--	± 100	nA
Gate-Source Threshold Voltage	$V_{\text{GS}(\text{th})}$	$V_{\text{DS}} = V_{\text{GS}}, I_{\text{D}} = 250\mu\text{A}$	2.0	--	4.0	V
Drain-Source On-Resistance (Note4)	$R_{\text{DS}(\text{on})}$	$V_{\text{GS}} = 10\text{V}, I_{\text{D}} = 20\text{A}$	--	45	50	m Ω
Forward Transconductance (Note4)	gfs	$V_{\text{DS}} = 25\text{V}, I_{\text{D}} = 20\text{A}$	--	16	--	S
Dynamic						
Input Capacitance	C_{iss}	$V_{\text{GS}} = 0\text{V},$ $V_{\text{DS}} = 25\text{V},$ $f = 1.0\text{MHz}$	--	2800	--	pF
Output Capacitance	C_{oss}		--	355	--	
Reverse Transfer Capacitance	C_{rss}		--	101	--	
Total Gate Charge	Q_{g}	$V_{\text{DD}} = 160\text{V}, I_{\text{D}} = 40\text{A},$	--	154		nC
Gate-Source Charge	Q_{gs}		--	13	--	
Gate-Drain Charge	Q_{gd}		--	58	--	
Turn-on Delay Time	$t_{\text{d}(\text{on})}$	$V_{\text{DD}} = 160\text{V}, I_{\text{D}} = 40\text{A},$ $V_{\text{GS}} = 15\text{V}, R_{\text{G}} = 25\Omega$	--	46	--	ns
Turn-on Rise Time	t_{r}		--	54	--	
Turn-off Delay Time	$t_{\text{d}(\text{off})}$		--	360	--	
Turn-off Fall Time	t_{f}		--	96	--	
Drain-Source Body Diode Characteristics						
Continuous Source Current	I_{SD}	Integral PN-diode in MOSFET	--	--	35	A
Pulsed Source Current	I_{SM}		--	--	140	
Body Forward Voltage	V_{SD}	$I_{\text{S}} = 20\text{A}, V_{\text{GS}} = 0\text{V}$	--	--	1.4	V
Reverse Recovery Time	t_{rr}	$V_{\text{GS}} = 0\text{V}, I_{\text{F}} = 10\text{A},$ $di_{\text{F}}/dt = 100\text{A}/\mu\text{s}$	--	152	--	ns
Reverse Recovery Charge	Q_{rr}		--	1	--	μC

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature
2. $L = 1mH, V_{DD} = 30V, R_G = 25\Omega$, Starting $T_J = 25^\circ\text{C}$
3. Pulse Test: Pulse width $\leq 300\mu s$, Duty Cycle $\leq 1\%$

Ordering Information

Ordernumber	Package	Marking	Operation Temperature Range	MSL Grade	Ship, Quantity	Green
FDB2572-JSM	TO-263	FDB2572	-55 to 150°C	1	T&R, 800	RoHS

Typical Characteristics $T_J = 25^\circ\text{C}$, unless otherwise noted

Figure 1. Output Characteristics ($T_J = 25^\circ\text{C}$)

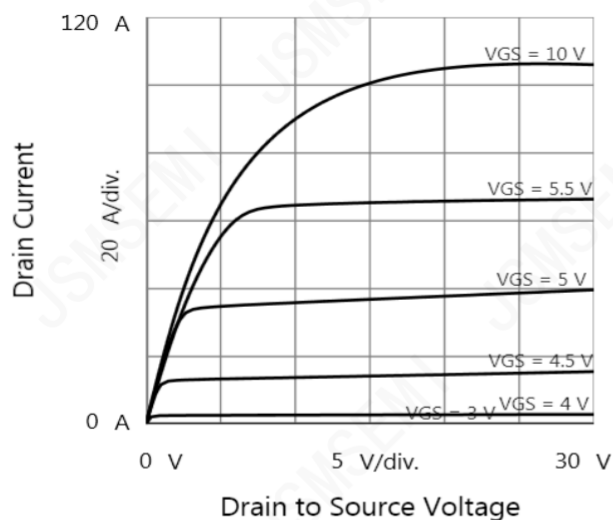


Figure 2. Transfer Characteristics

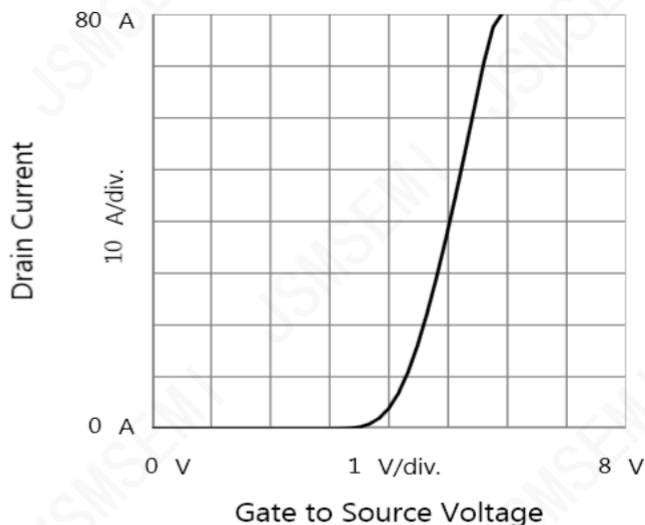


Figure 3. Drain to Source Resistance vs. Drain Current

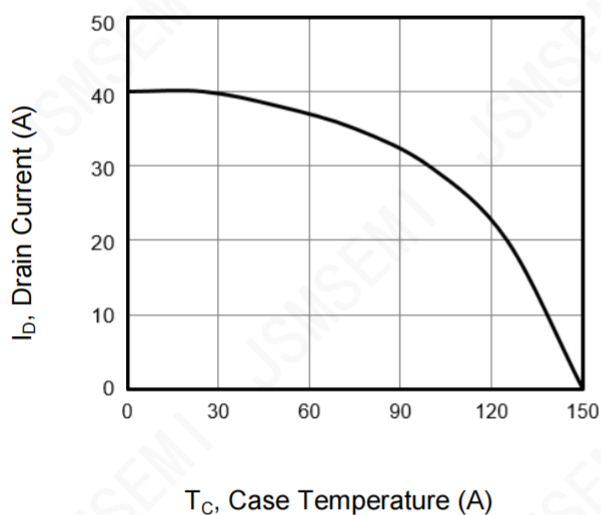


Figure 4. BV_{DSS} Variation vs. Temperature

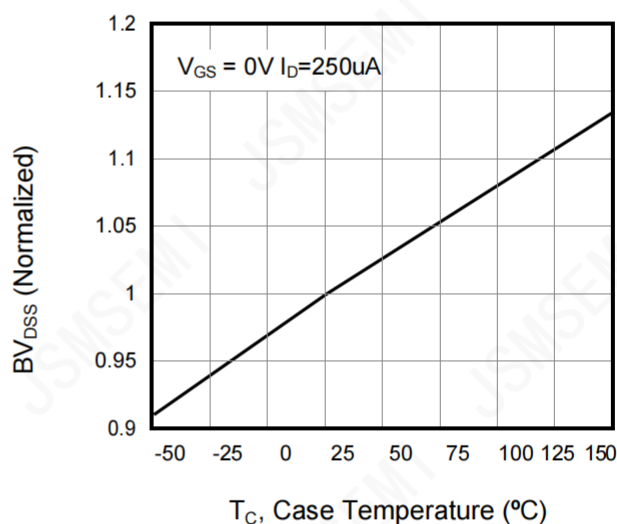


Figure 5. Drain to Source Voltage vs. Gate to Source Voltage

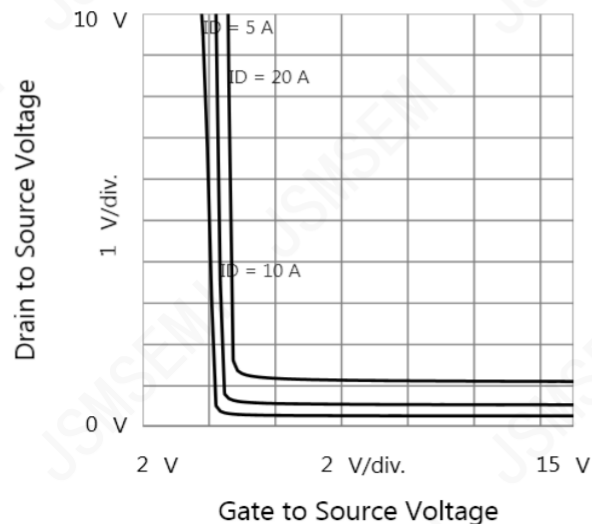
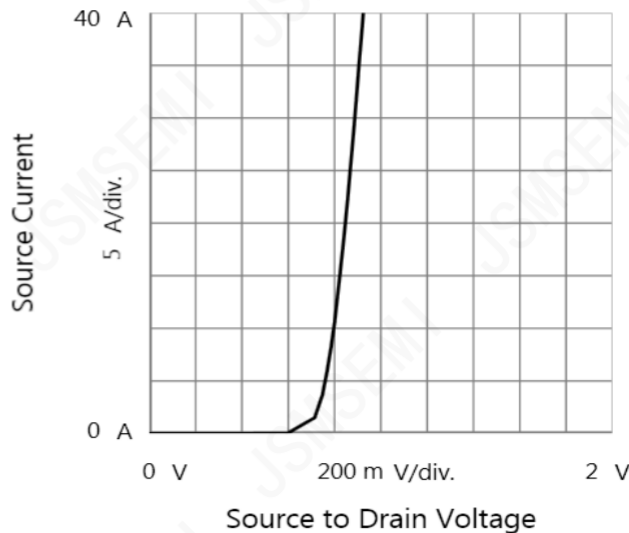


Figure 6. Body Diode Forward Characteristics



Typical Characteristics $T_J = 25^\circ\text{C}$, unless otherwise noted

Figure 7. Capacitance

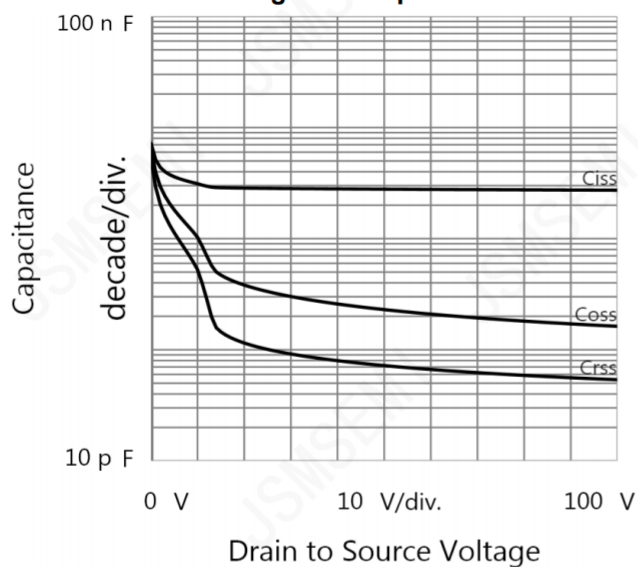


Figure 8. Gate Charge

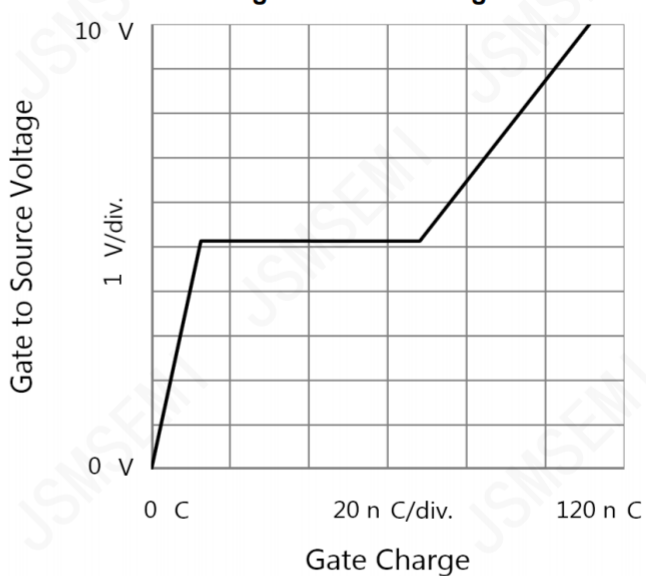


Figure 9. Transient Thermal Impedance

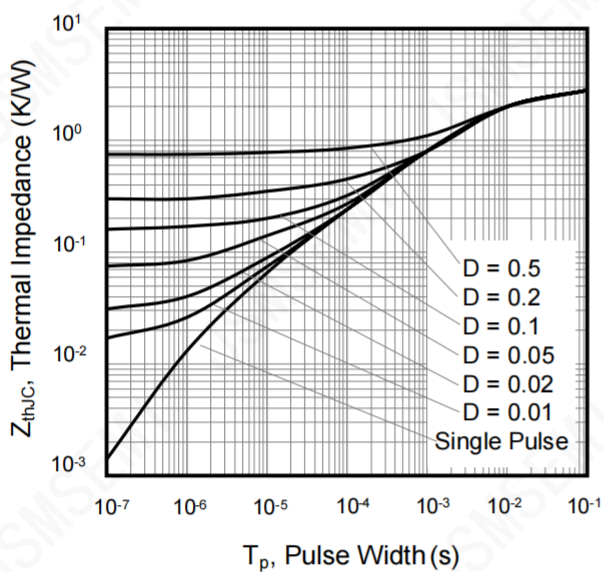


Figure A: Gate Charge Test Circuit and Waveform

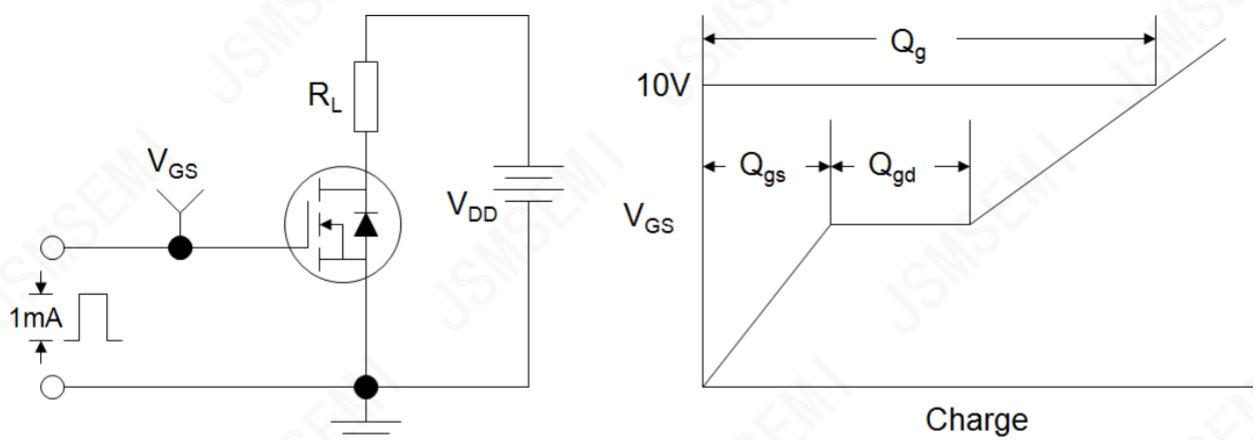


Figure B: Resistive Switching Test Circuit and Waveform

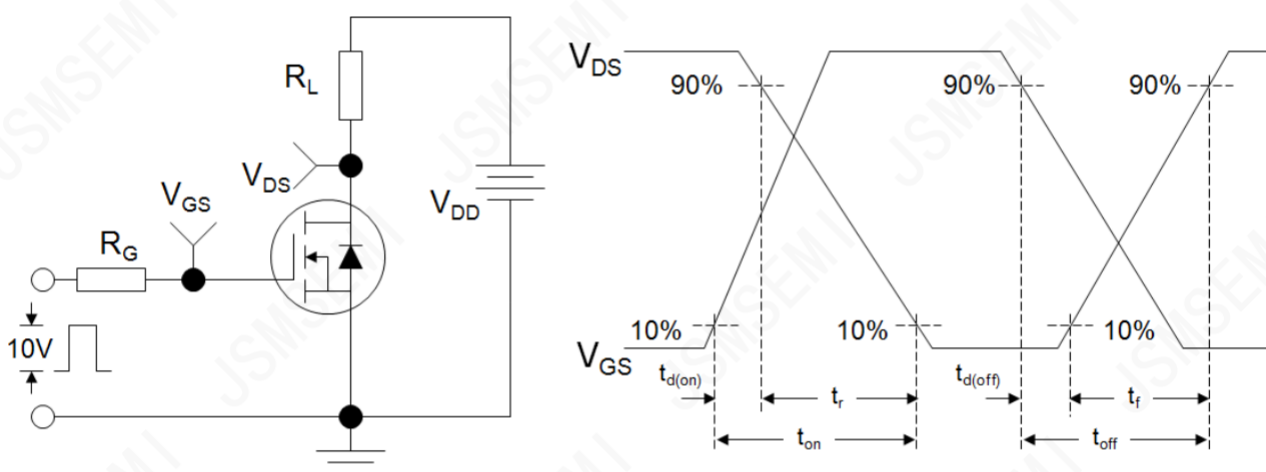
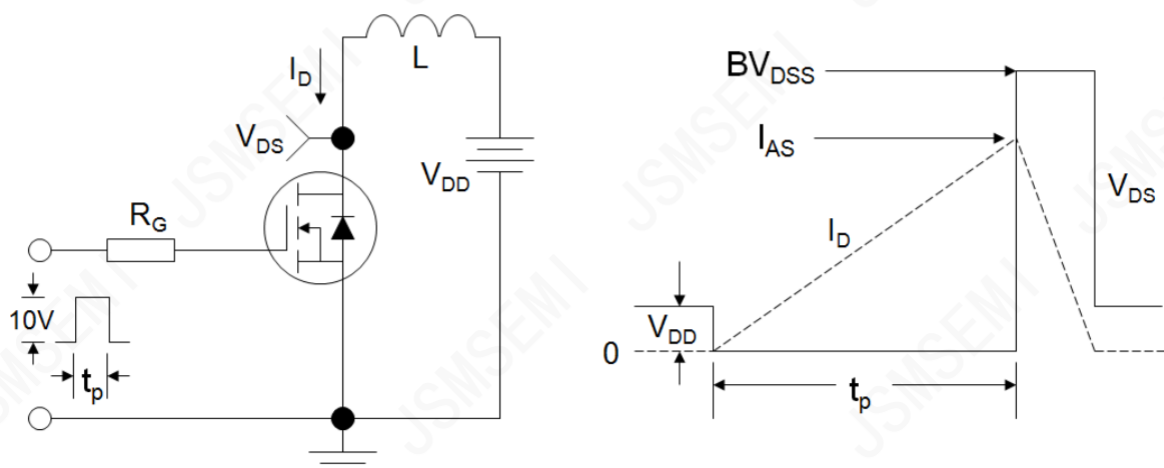
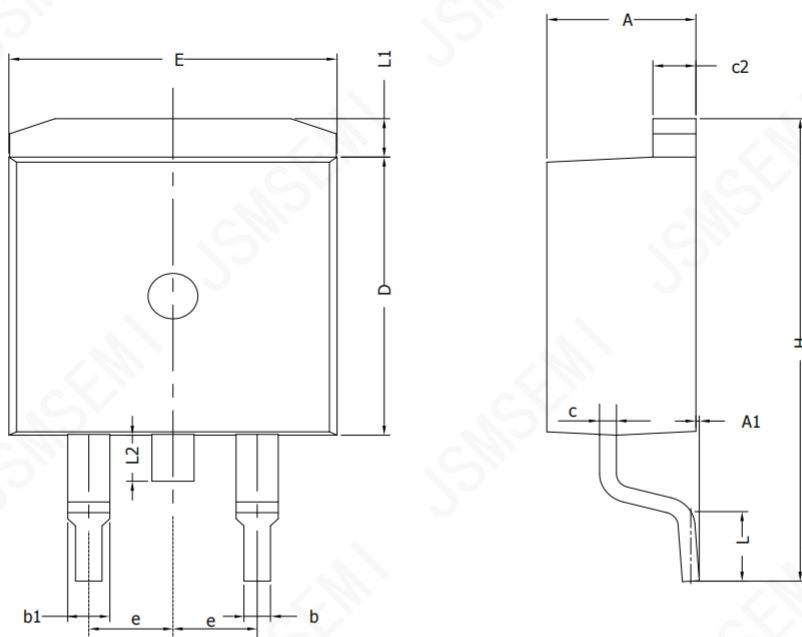


Figure C: Unclamped Inductive Switching Test Circuit and Waveform



Package Outline: TO-263



SYMBOL	MIN	NOM	MAX
A	4.30	4.57	4.72
A1	0	0.10	0.25
b	0.71	0.81	0.91
c	0.30	---	0.60
c2	1.17	1.27	1.37
D	8.50	---	9.35
E	9.80	---	10.45
e	2.54BSC		
H	14.70	---	15.75
L	2.00	2.30	2.74
L1	1.12	1.27	1.42
L2	---	---	1.75

Revision History

Rev.	Change	Date
V1.0	Initial version	6/27/2021

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