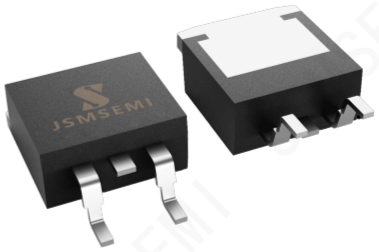
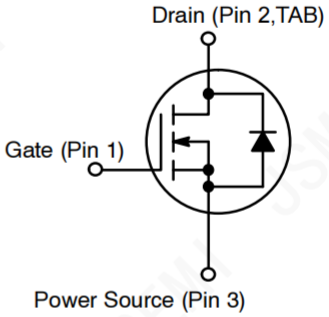
Product Summary

- V_{DS} 200V
- I_D 35A
- $R_{DS(ON)}$(at V_{GS}=10V) ＜60mΩ
- 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°C, unless otherwise noted

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DSS}	200	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°C)	P_D	160	W
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55~+150	°C

Thermal Resistance

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-Case	R_{thJC}	1.2	°C/W
Thermal Resistance, Junction-to-Ambient	R_{thJA}	60	

Specifications T_J = 25°C, 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	200	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 220V, V_{GS} = 0V, T_J = 25°C	--	--	1	μA
		V_{DS} = 220V, V_{GS} = 0V, TJ = 125°C	--	--	100	
Gate-Source Leakage	I_{GSS}	V_{GS} = ±20V, V_{DS} = 0V	--	--	±100	nA
Gate-Source Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	2.0	--	4.0	V
Drain-Source On-Resistance (Note4)	$R_{DS(on)}$	V_{GS} = 10V, I_D = 20A	--	50	60	mΩ
Forward Transconductance (Note4)	gfs	VDS = 25V, ID = 20A	--	16	--	S
Dynamic						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 25V, f = 1.0MHz	--	2800	--	pF
Output Capacitance	C_{oss}		--	355	--	
Reverse Transfer Capacitance	C_{rss}		--	101	--	
Total Gate Charge	Q_g	V_{DD} = 160V, I_D = 40A,	--	154		nC
Gate-Source Charge	Q_{gs}		--	13	--	
Gate-Drain Charge	Q_{gd}		--	58	--	
Turn-on Delay Time	$t_{d(on)}$	V_{DD} = 160V, I_D = 40A, VGS =15V.RG = 25Ω	--	46	--	ns
Turn-on Rise Time	t_r		--	54	--	
Turn-off Delay Time	$t_{d(off)}$		--	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_S = 20A, V_{GS} = 0V	--	--	1.4	V
Reverse Recovery Time	t_{rr}	V_{GS} = 0V,I_F = 10A, di_F/dt =100A /μs	--	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 Ω, Starting T_J = 25 °C
3. Pulse Test: Pulse width ≤ 300μs, Duty Cycle ≤ 1%

Ordering Information

Order number	Package	Marking	Operation TemperatureRange	MSL Grade	Ship, Quantity	Green
FQB34N20LTM-JSM	TO-263	FQB34N20L	-55 to 150°C	1	T&R,800	Rohs

Typical Characteristics T_J = 25ºC, unless otherwise noted

Figure 1. Output Characteristics (T_J= 25ºC)

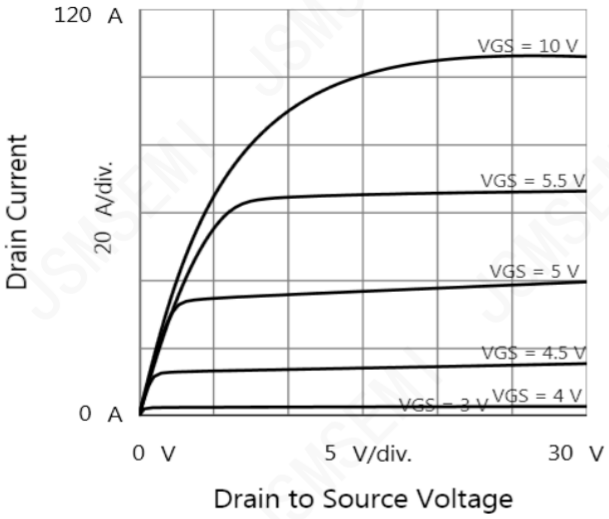


Figure 2. Transfer Characteristics

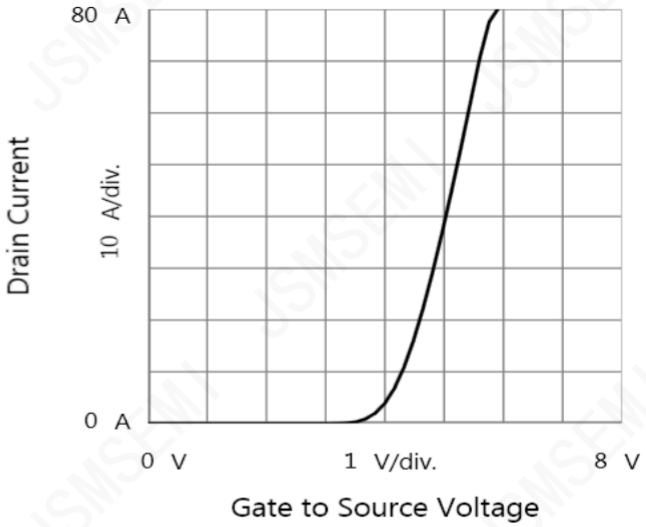


Figure 3. Drain to Source Resistance vs. Drain Current

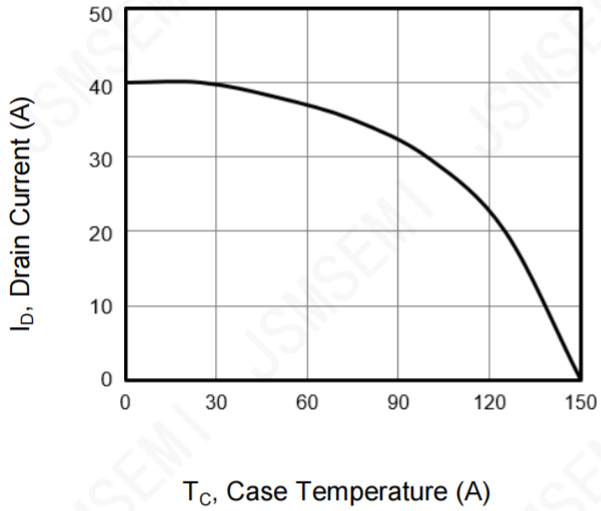


Figure 4. BV_{DSS} Variation vs. Temperature

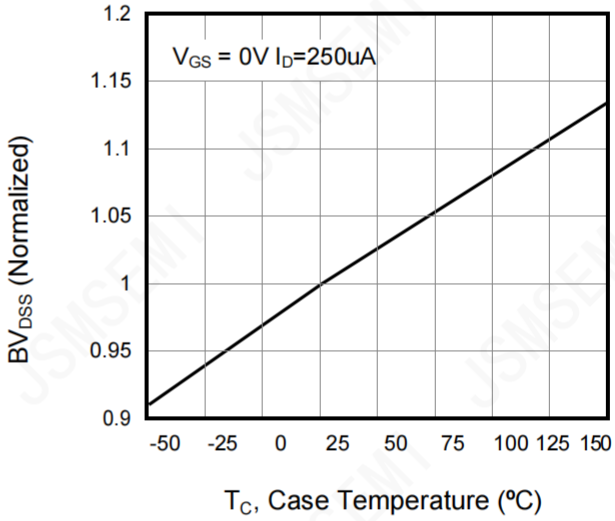


Figure 5. Drain to Source Voltage vs. Gate to Source Voltage

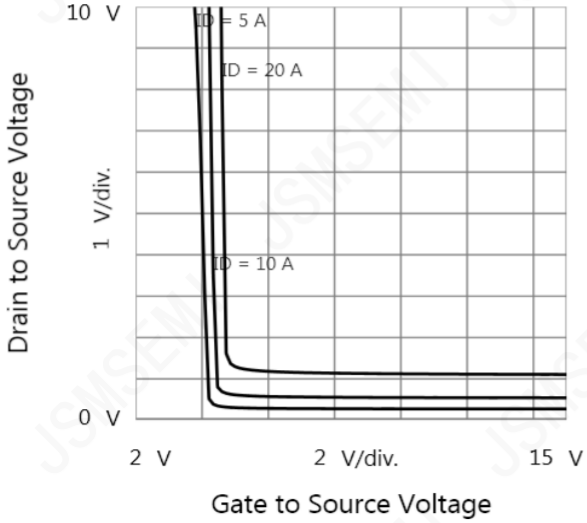
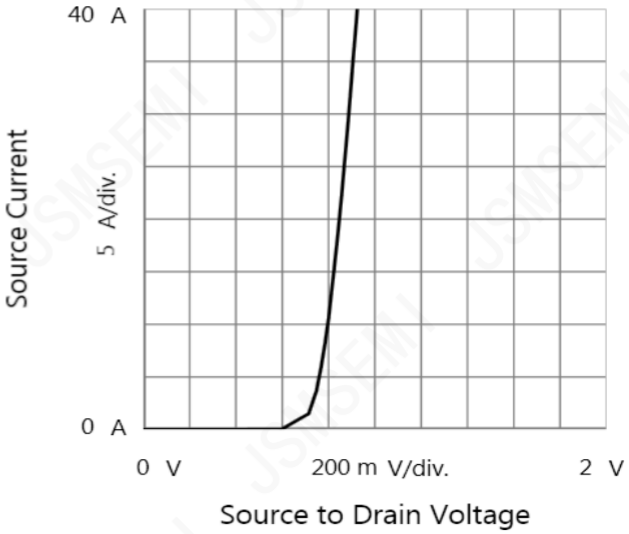


Figure 6. Body Diode Forward Characteristics



Typical Characteristics T_J = 25ºC, unless otherwise noted

Figure 7. Capacitance

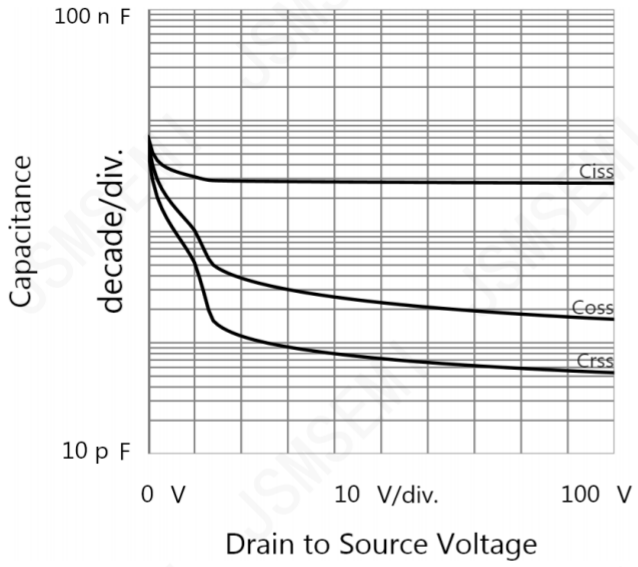


Figure 8. Gate Charge

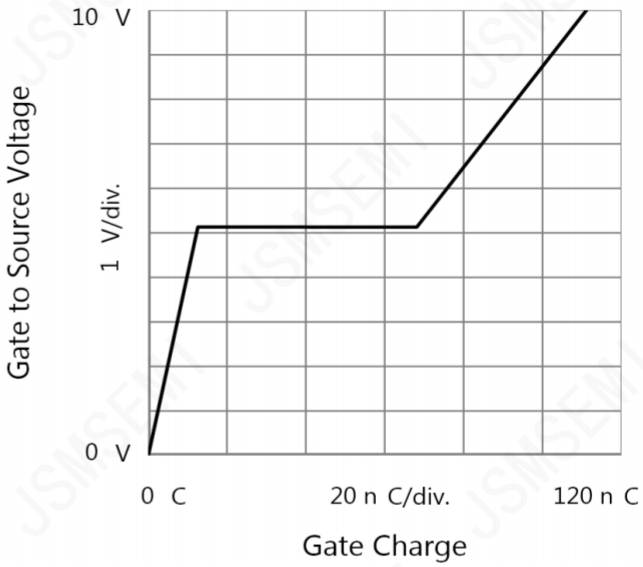


Figure 9. Transient Thermal Impedance

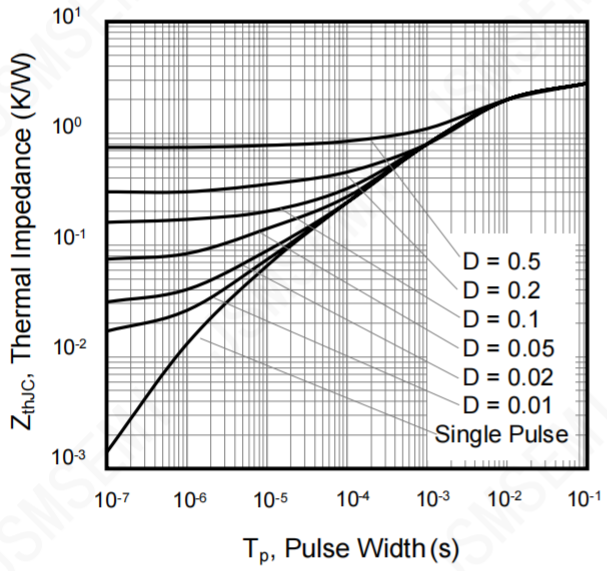


Figure A：Gate Charge Test Circuit and Waveform

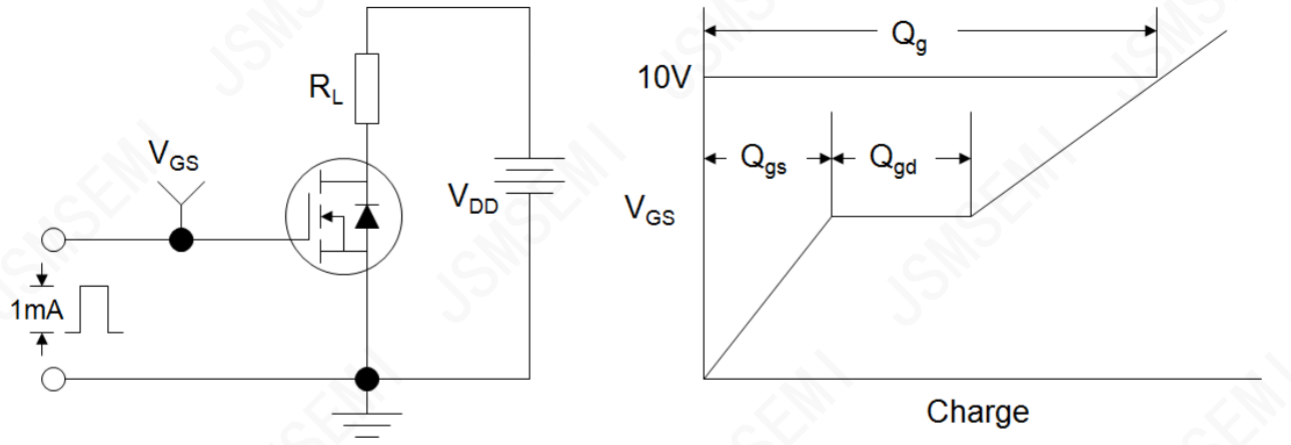


Figure B：Resistive Switching Test Circuit and Waveform

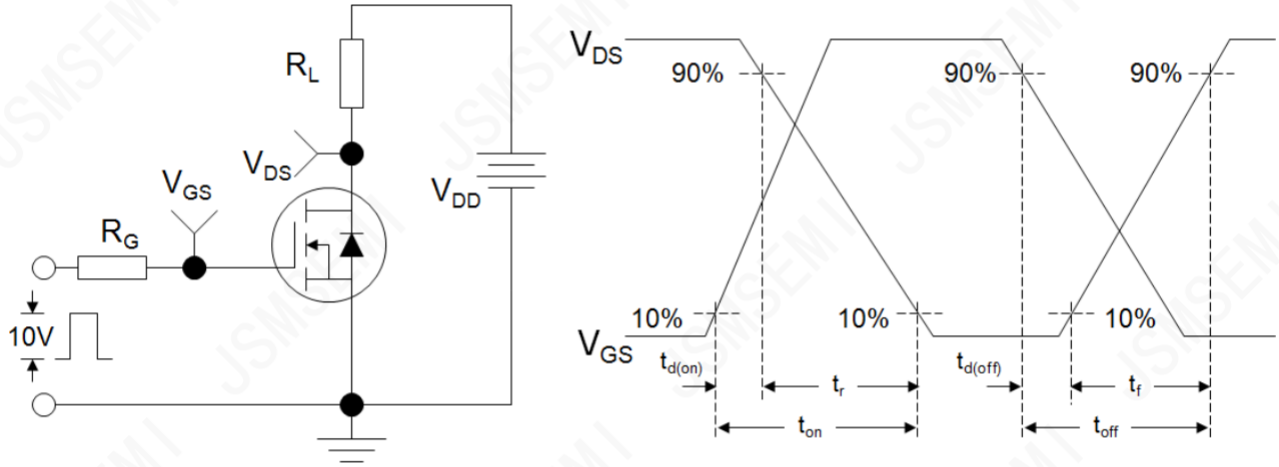
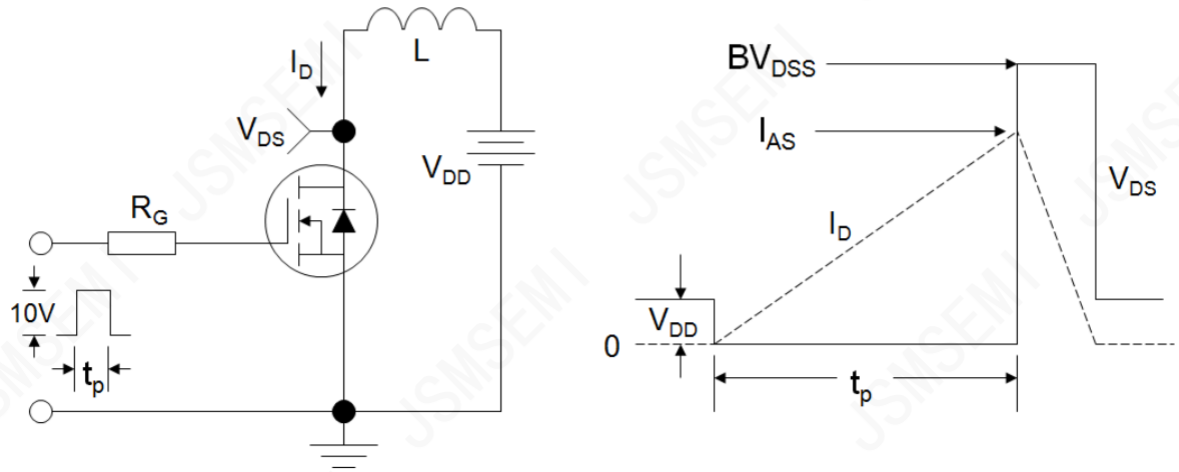
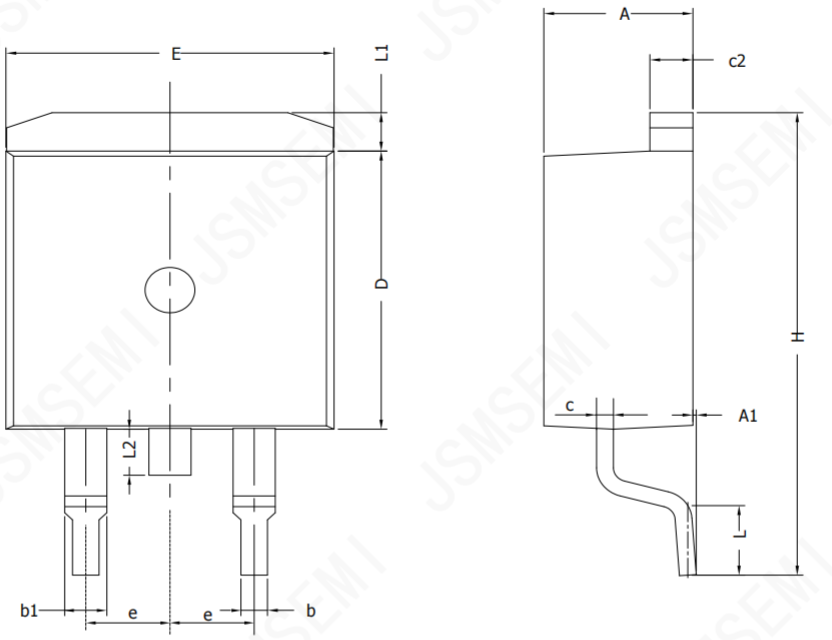


Figure C：Unclamped Inductive Switching Test Circuit and Waveform



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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