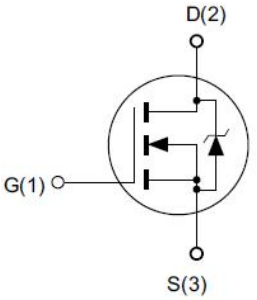
MJB11N70

N-Channel Power MOSFET

Features

- ◆ 700V, 11A, $R_{DS(ON)}$(Typ.) = 0.34Ω@V_{GS} = 10V
- ◆ Advanced Super Junction Technology
- ◆ Easy to Control Gate Switching
- ◆ 100% Avalanche Tested



Application

- ◆ Single-ended flyback or two-transistor forward topologies
- ◆ PC power, PD Adaptor, LCD & PDP TV and LED lighting

Absolute Maximum Ratings Tc = 25°C unless otherwise noted

Symbol	Parameter	Rating	Unit
V_{DS}	Drain-Source Voltage [a]	700	V
V_{GS}	Gate-Source Voltage	±30	
I_D	Drain Current-Continuous, T_C = 25°C	11	A
I_{DM}	Drain Current-Pulsed [b]	33	
P_D	Maximum Power Dissipation @ T_J = 25°C	83	W
dv/dt	Peak Diode Recovery dv/dt [c]	15	V/ns
E_{AS}	Single Pulsed Avalanche Energy [d]	500	mJ
T_J, T_{STG}	Operating and Store Temperature Range	150, -55 to 150	°C

Thermal Characteristics

Symbol	Parameter	Value	Unit
$R_{\theta JC}$	Thermal Resistance, Junction to Case	1.5	°C/W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	62	

Electrical Characteristics T_J = 25°C unless otherwise noted

■ **Off Characteristics**

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS} = 0V, I_D = 10mA	700	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = 700V, V_{GS} = 0V	-	-	1	μA
I_{GSS}	Forward Gate Body Leakage Current	V_{DS} = 0V, V_{GS} = 30V	-	-	±100	nA

■ On Characteristics

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = 250μA	2.8	-	4.2	V
$R_{DS(on)}$	Static Drain-Source On-Resistance [d]	V_{GS} = 10V, I_D = 5.5A	-	0.34	0.38	Ω

■ Dynamic Characteristics

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
R_g	Gate Resistance	f = 1.0MHz	-	11.2	-	Ω
C_{iss}	Input Capacitance	V_{DS} = 50V, V_{GS} = 0V, f = 10kHz	-	901	-	pF
C_{oss}	Output Capacitance		-	59	-	
C_{rss}	Reverse Transfer Capacitance		-	5.3	-	

■ On Characteristics

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
$t_{d(on)}$	Turn-On Delay Time	V_{DD} = 400V, V_{GS}= 13V, I_D = 4.8A, R_G = 3.4Ω	-	7.2	-	ns
t_r	Turn-On Rise Time		-	20.8	-	
$t_{d(off)}$	Turn-Off Delay Time		-	29.2	-	
t_f	Turn-Off Fall Time		-	19.2	-	
Q_g	Total Gate Charge	V_{DS} = 400V, V_{GS} = 0 to 10V, I_D = 4.8A	-	9.5		nC
Q_{gs}	Gate-Source Charge		-	1.5	-	
Q_{gd}	Gate-Drain Charge		-	2.5	-	

■ Drain-Source Diode Characteristics

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
I_S	Drain-Source Diode Forward Continuous Current	V_{GS} = 0V	-	-	11	A
I_{SM}	Maximum Pulsed Current	V_{GS} = 0V	-	-	33	
V_{SD}	Drain-Source Diode Forward Voltage	V_{GS} = 0V, I_F = 1A	-	0.74	-	V
T_{rr}	Body Diode Reverse Recovery Time	V_R = 400V, I_F = 4.8A dI_F/dt = 100A/μs	-	250	-	ns
Q_{rr}	Body Diode Reverse Recovery Charge	V_R = 400V, I_F = 4.8A dI_F/dt = 100A/μs	-	2.572	-	μC

Notes:

a. T_J = +25 ℃ to +150 ℃.

b. Repetitive rating; pulse width limited by maximum junction temperature.

c. Pulse width ≦ 300μs; duty cycle ≦ 2%.

d.L = 10mH, V_{DD} = 50V, I_{AS} = 10A, R_G = 25Ω Starting T_J = 25 ℃.

■ Characteristic Curve

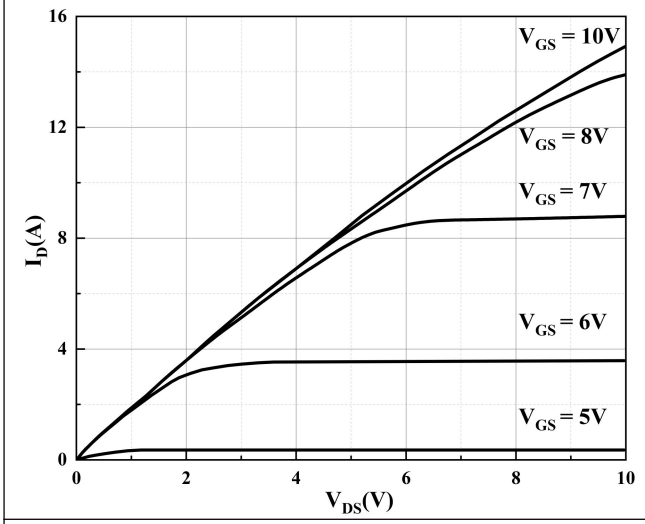


Figure 1. Typical Output Characteristics

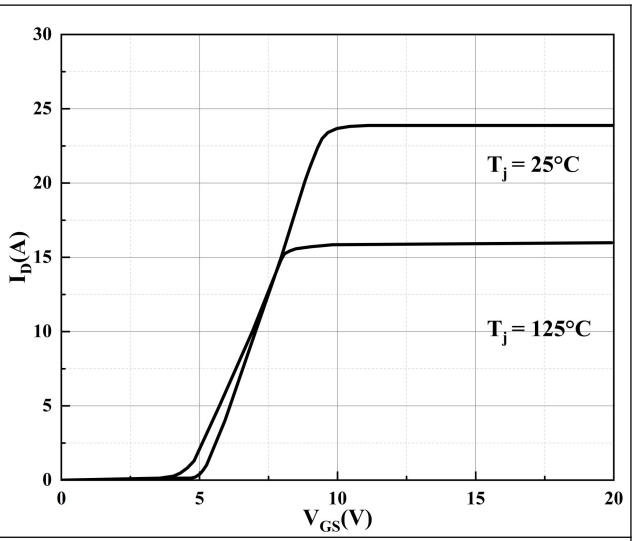


Figure 2. Typical Transfer Characteristics

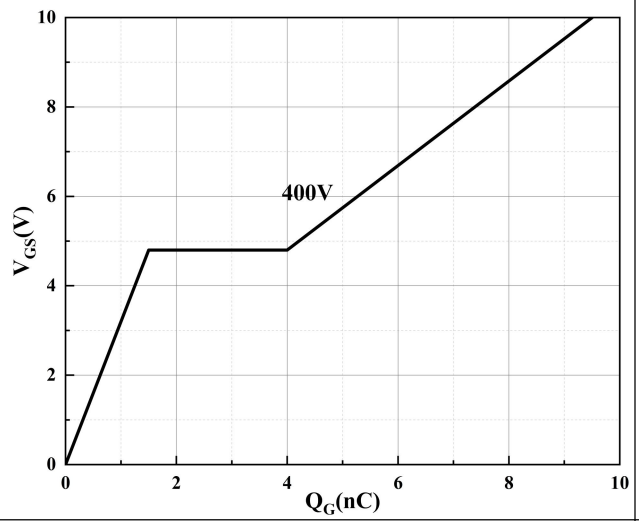


Figure 3. Typical Gate-Charge Characteristics

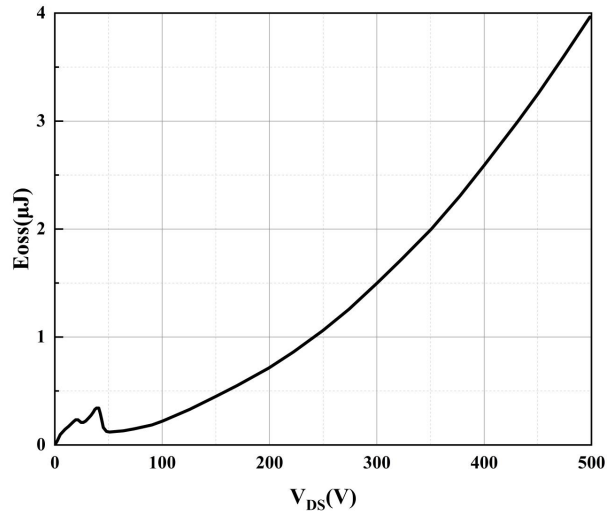


Figure 4. Typical Coss Stored Energy

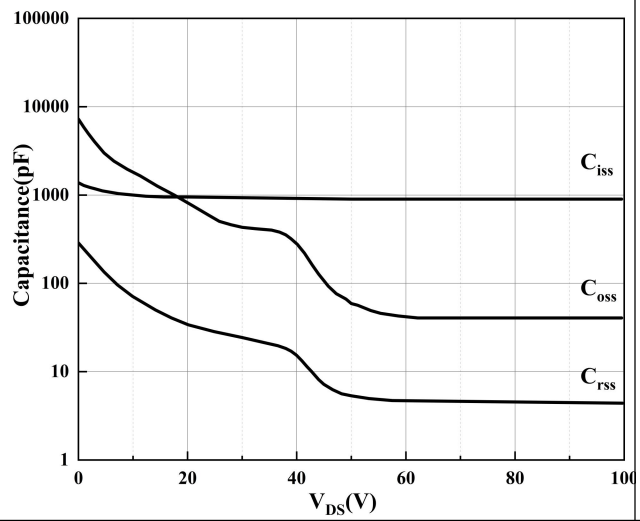


Figure 5. Typical Capacitance

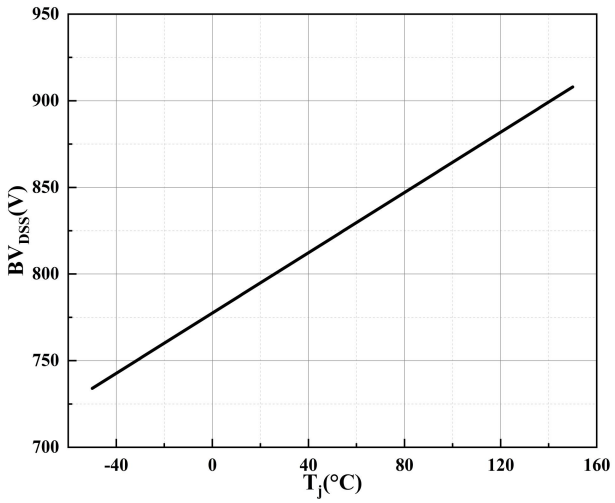


Figure 6. Drain-source Breakdown Voltage

■ Package Information

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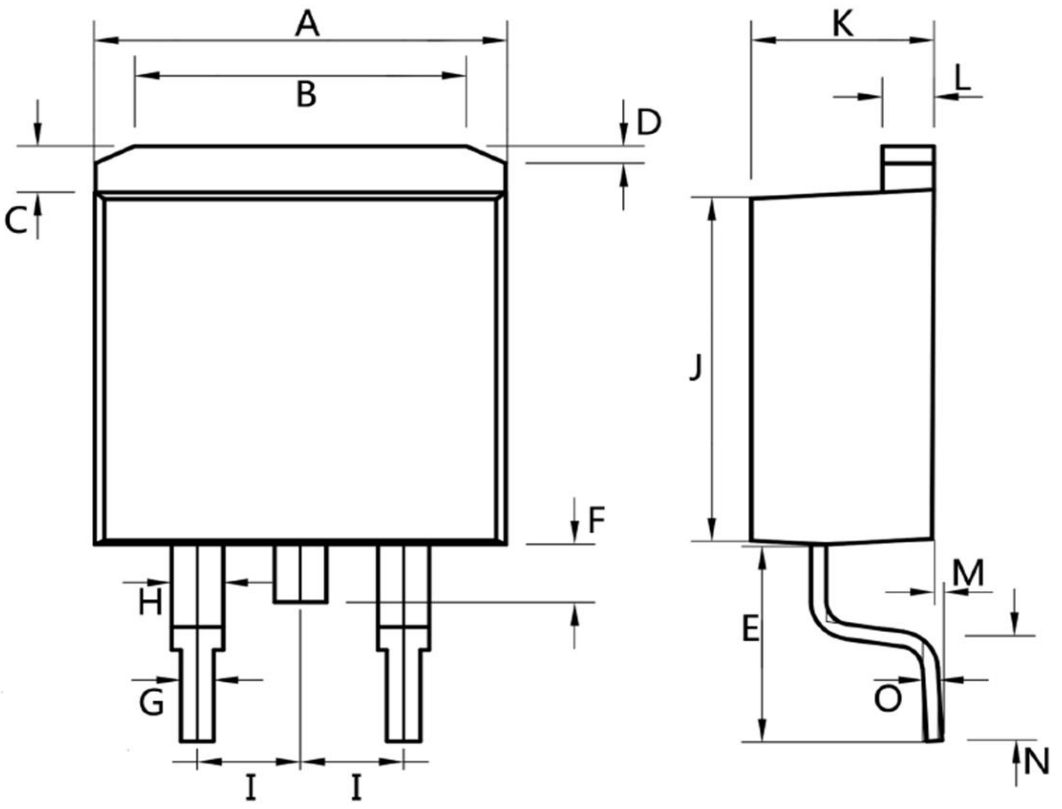

Dim.	Min.	Max.
A	10.15	10.35
B	6	8
C	1.2	1.5
D	0.55	1.0
E	4.3	5.3
F	1.4	1.6
G	0.75	0.85
H	1.2	1.5
I	Typ2.54	
J	8.5	9.5
K	4.3	4.55
L	1.25	1.35
M	0.02	0.23
N	2.2	2.8
O	0.35	0.45
All Dimensions in millimeter		