700V, 6A, 1251mΩ N-channel Power Planar MOSFET

JMPK6N70BJ

Product Summary

Parameters	Value	Unit
V_{DSS}	700	V
$V_{GS(th)\_Typ}$	3.0	V
I_D(@V_{GS}=10V)	6	A
$R_{DS(ON)\_Typ}$(@V_{GS}=10V	1251	mΩ

Ordering Information

Device	Marking	MSL	Form	Package	Reel(pcs)	Per Carton (pcs)
JMPK6N70BJ	JMPK6N70BJ	3	Tape&Reel	TO-252-3L	2500	25000

Absolute Maximum Ratings (@ T_C = 25°C unless otherwise specified)

Symbol	Parameter		Value	Unit
V_{DS}	Drain-to-Source Voltage		700	V
V_{GS}	Gate-to-Source Voltage		±30	V
		T_C = 25°C	6	A
		T_C = 100°C	4	
I_{DM}	Pulsed Drain Current		Refer to Fig.4	A
E_{AS}	Single Pulsed Avalanche Energy (2)		157	mJ
		T_C = 25°C		W
		T_C = 100°C		
T_J, T_{STG}				°C

Symbol		Unit
R		
R		

Electrical Characteristics (T_J = 25°C unless otherwise specified)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
Off Characteristics						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	I_D = 250μA, V_{GS} = 0V	700	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = 700V, V_{GS} = 0V	-	-	1.0	μA
I_{GSS}	Gate-Body Leakage Current	V_{DS} = 0V, V_{GS} = ±30V	-	-	±100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = 250μA	2.1	3.0	3.9	V
$R_{DS(ON)}$			-	1251	1627	mΩ
R_g			-	2.3	-	Ω
C_{iss}			-	1144	-	pF
C_{oss}			-	30	-	pF
C_{rss}			-	7.4	-	pF
Q_g			-	24	-	nC
Q_{gs}			-	6.0	-	nC
Q_{gd}	Gate Drain("Miller") Charge		-	7.0	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-On DelayTime		-	12	-	ns
t_r	Turn-On Rise Time		-	16	-	ns
$t_{d(off)}$	Turn-Ofe016p-4(u)-5(r).12TTime		-	32	-	ns
t_f			-	23	-	ns
I_S			-	-	6	A
I_{SM}	Maximum Pulsed Body Diode Forward Current		-	-	24	A
V_{SD}			-		1.2	V
trr			-	261	-	ns
Qrr			-	1998	-	nC

Notes: 1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.

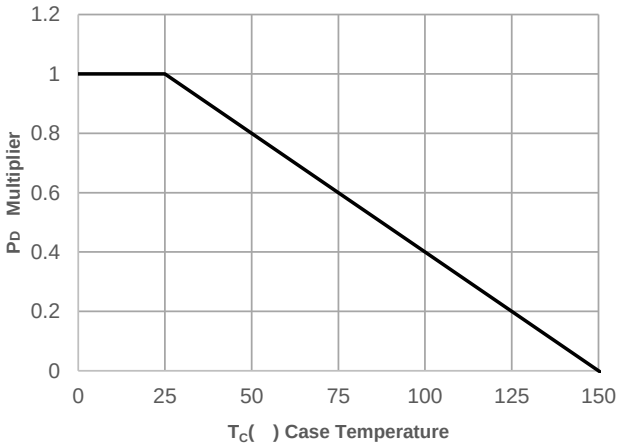
2. E_{AS} condition: Starting T_J=25C, V_{DD}=50V, V_{GS}=10V, R_G=25ohm, L=10mH, I_{AS}=5.6A, V_{DD}=0V during time in avalanche.

3. R is measured with the device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.

4. Pulse Test: Pulse Width 0.5%.

Typical Performance Characteristics

Figure 1: Power De-rating



Typical Performance Characteristics

Figure 5: Output Characteristics

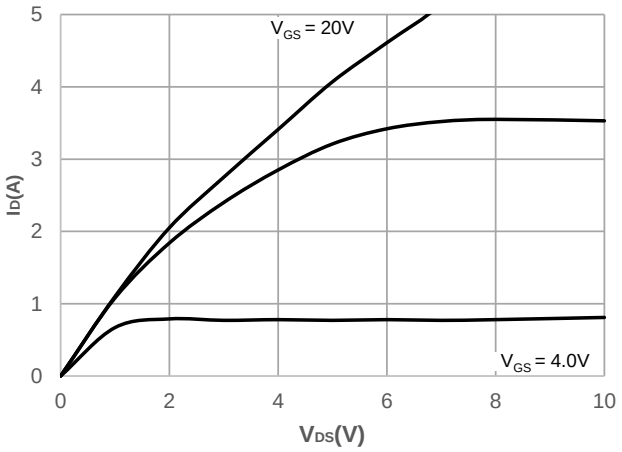
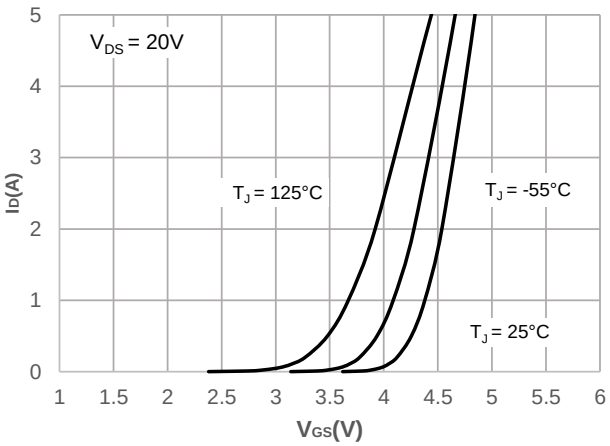


Figure 6: Typical Transfer Characteristics



Typical Performance Characteristics

Test Circuit

Figure 1: Gate Charge Test Circuit & Waveform

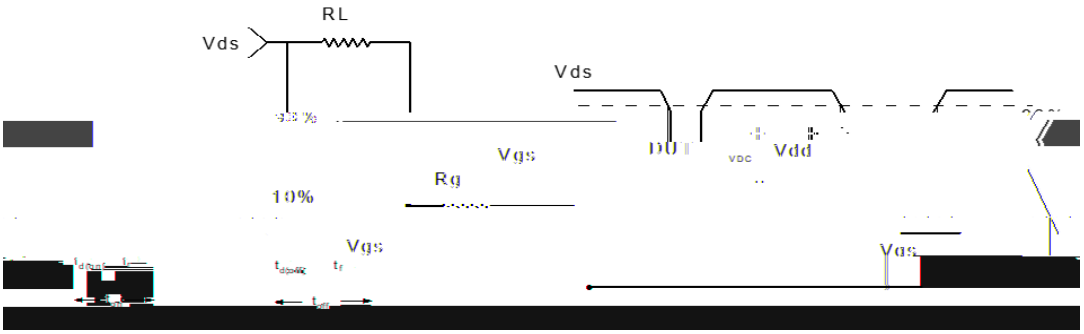


Figure 2: Resistive Switching Test Circuit & Waveform

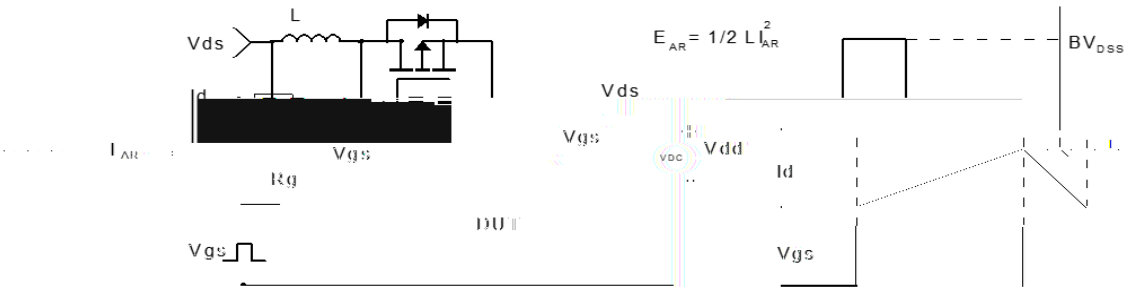


Figure 3: Unclamped Inductive Switching Test Circuit& Waveform

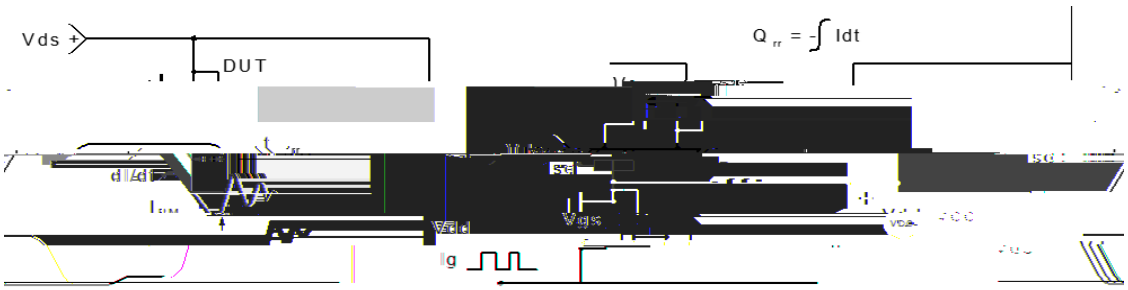


Figure 4: Diode Recovery Test Circuit & Waveform

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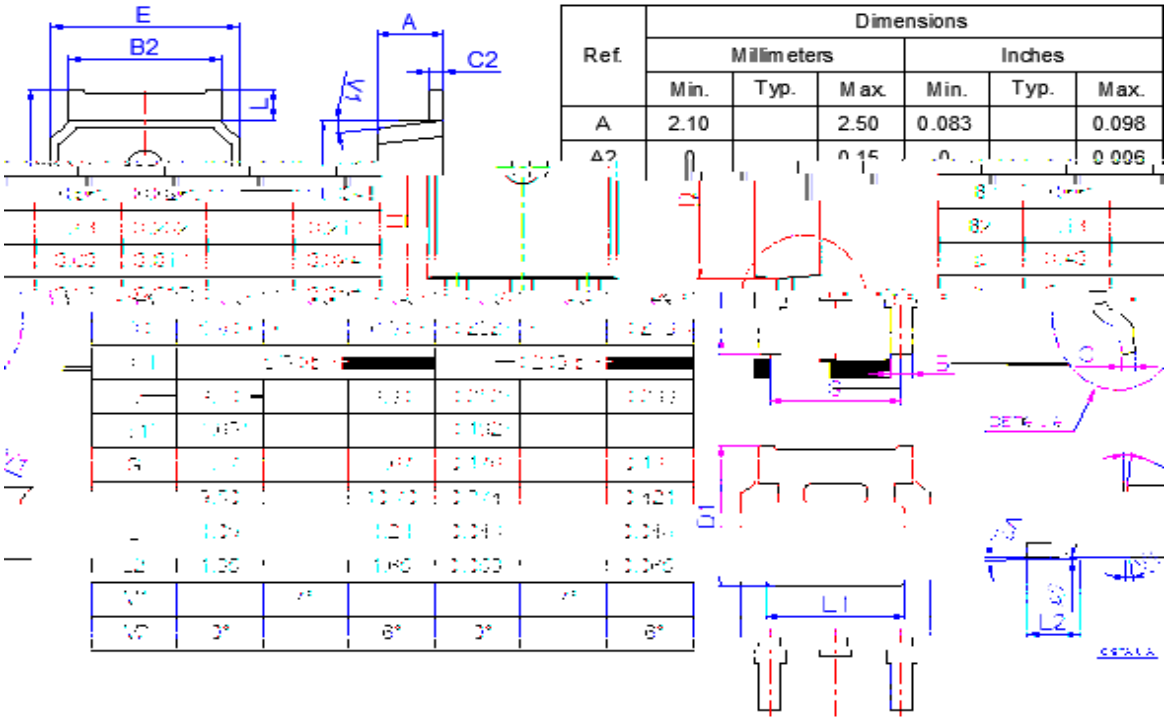
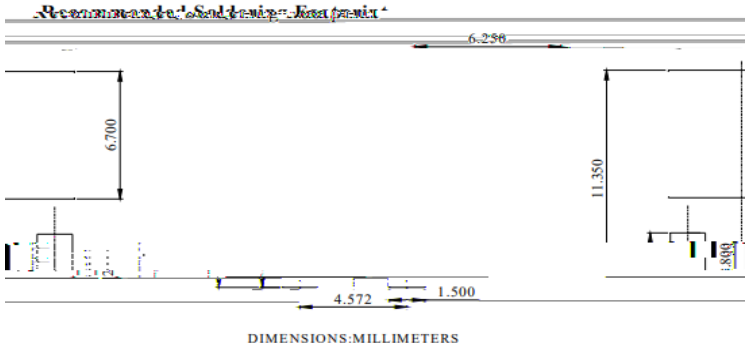
Package Mechanical Data(TO-252-3L)



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.10		2.50	0.083		0.098
A2	0		0.15	0		0.006



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