

700V, 6A, 1251m 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	m Ω

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 (@ $T_C = 25^\circ\text{C}$ unless otherwise specified)

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

Symbol	Unit
R_{JA}	
R_{JC}	

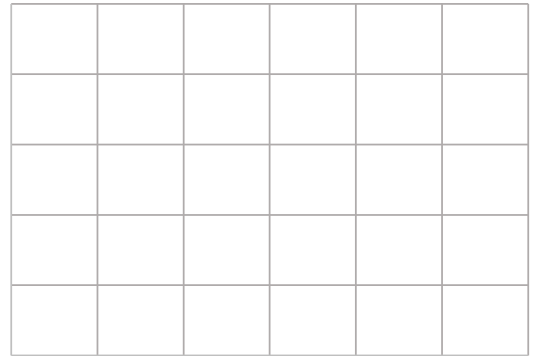
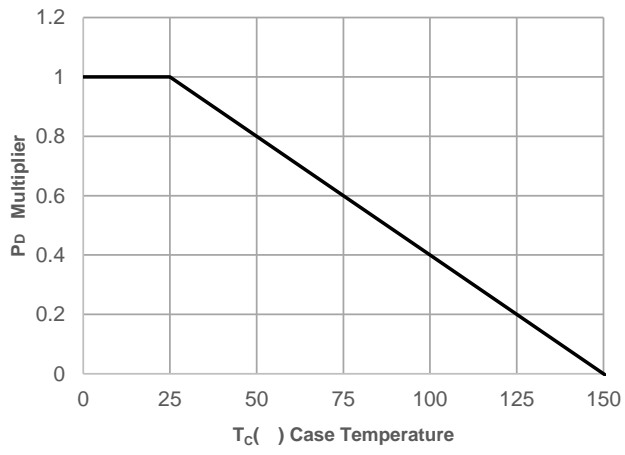
Electrical Characteristics (T_J = 25°C unless otherwise specified)

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 Delay Time		-	12	-	ns
t _r	Turn-On Rise Time		-	16	-	ns
t _{d(off)}	Turn-Off Delay Time		-	32	-	ns
t _f	Fall Time		-	23	-	ns
I _S			-	-	6	A
I _{SM}	Maximum Pulsed Body Diode Forward Current		-	-	24	A
V _{SD}			-	-	1.2	V
t _{rr}			-	261	-	ns
Q _{rr}			-	1998	-	nC

- Notes:
1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
 2. E_{AS} condition: Starting T_J=25°C, V_{DD}=50V, V_{GS}=10V, R_G=25ohm, L=10mH, I_{AS}=5.6A, V_{DD}=0V during time in avalanche.
 3. R_{JA} is measured with the device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.
 4. Pulse Test: Pulse Width 300μs, Duty Cycle 0.5%.

Typical Performance Characteristics

Figure 1: Power De-rating



Typical Performance Characteristics

Figure 5: Output Characteristics

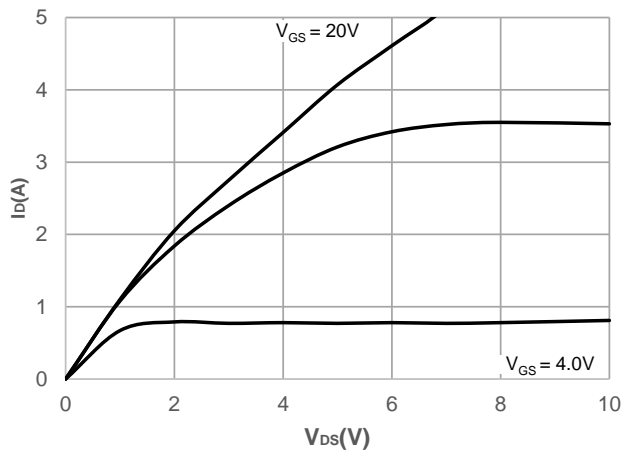
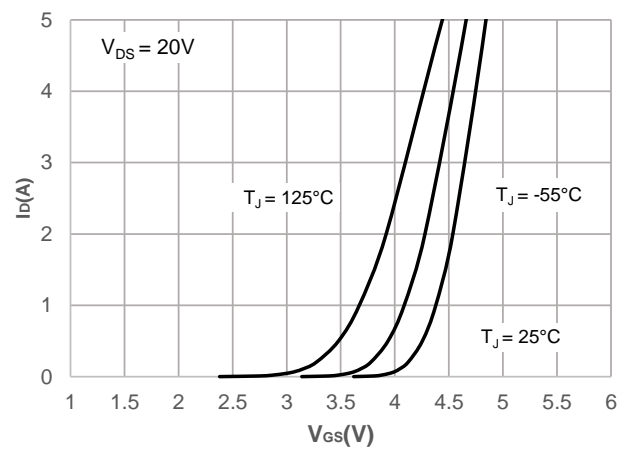


Figure 6: Typical Transfer Characteristics



Typical Performance Characteristics

Test Circuit

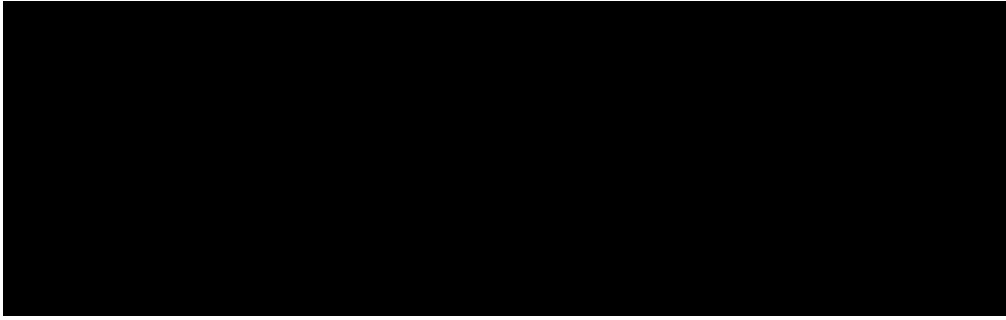


Figure 1: Gate Charge Test Circuit & Waveform

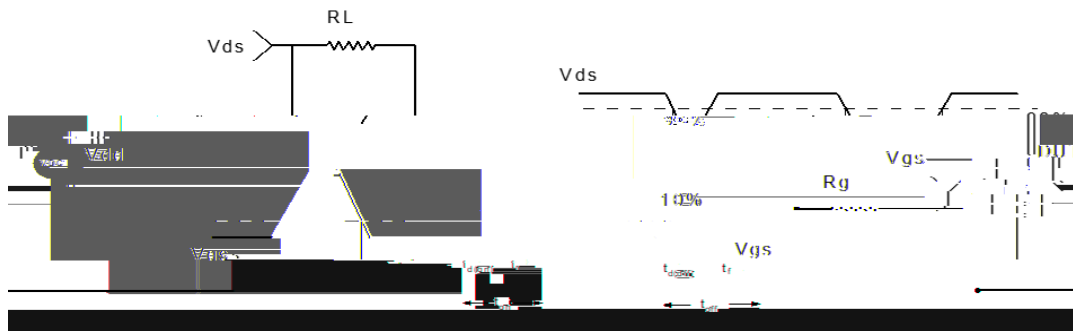


Figure 2: Resistive Switching Test Circuit & Waveform

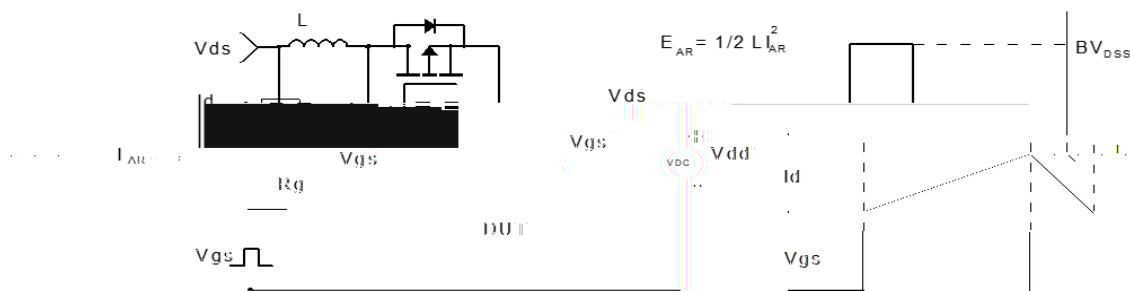


Figure 3: Unclamped Inductive Switching Test Circuit & Waveform

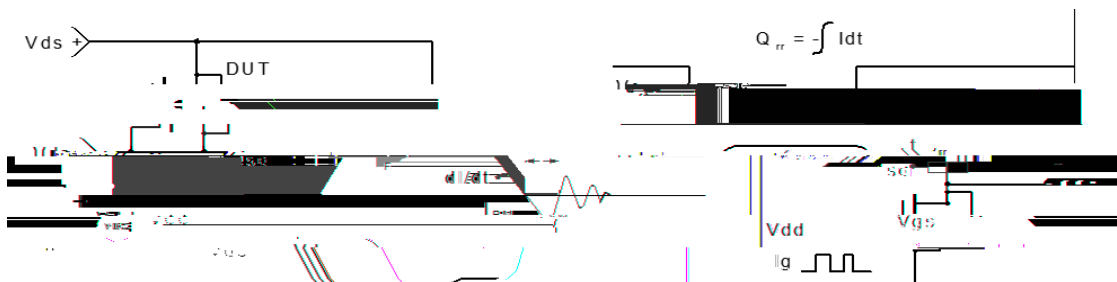
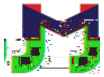
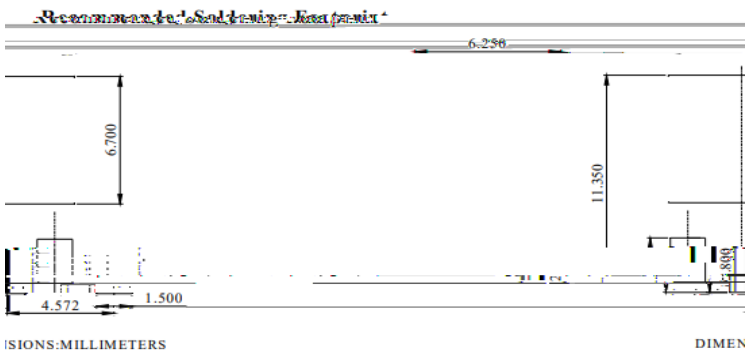
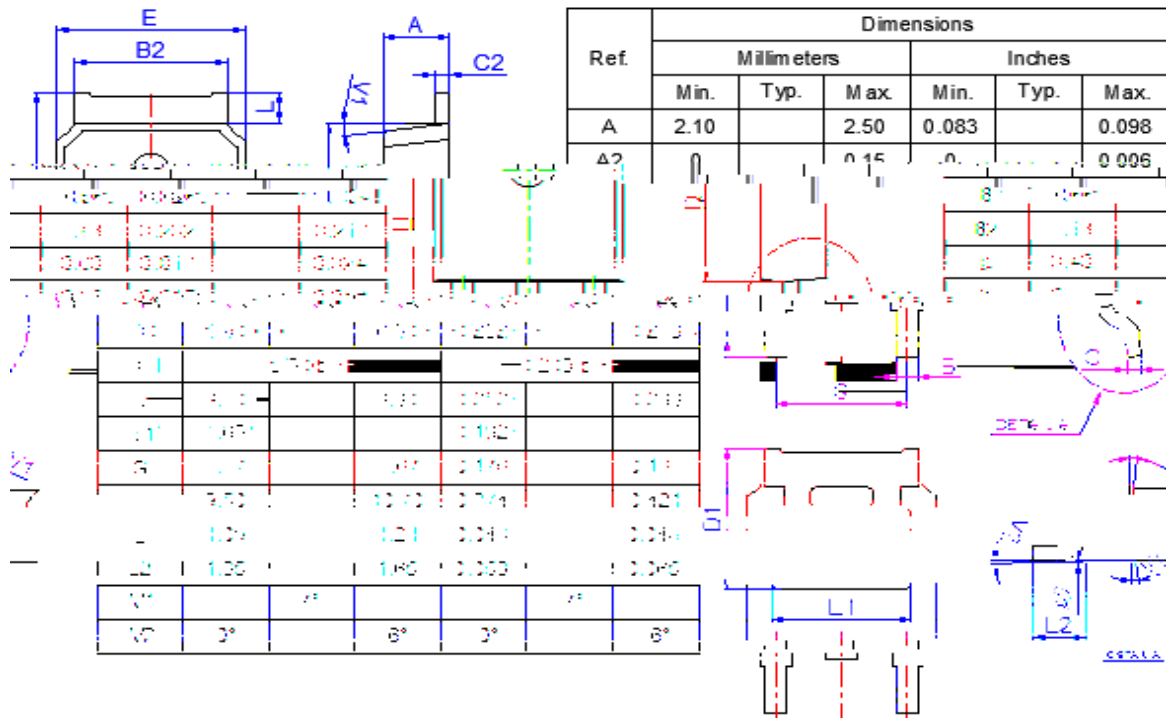


Figure 4: Diode Recovery Test Circuit & Waveform



Package Mechanical Data(TO-252-3L)



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