



Description

JMP N-channel MOSFET

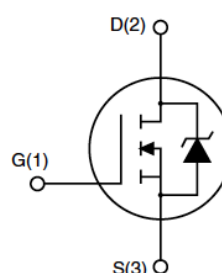
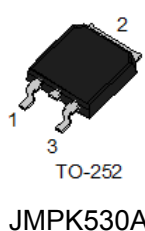
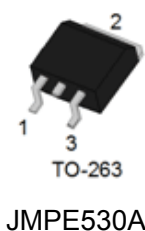
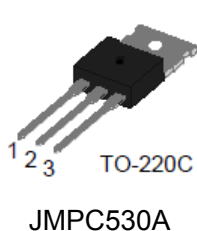
Features

- 100V, 17A
- $R_{DS(ON)} \leq 90m\Omega$ @ $V_{GS} = 10V$, $I_D = 9A$
- Fast Switching
- 100% Avalanche Tested
- Improved dv/dt Capability

Application

- Switch Mode Power Supply (SMPS)
- Uninterruptible Power Supply (UPS)
- Power Factor Correction (PFC)

Package



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

Symbol	Parameter		Max.		Units
			TO-220C/TO-263	TO-252	
V_{DSS}	Drain-Source Voltage		100		V
V_{GSS}	Gate-Source Voltage		± 20		V
I_D	Continuous Drain Current	$T_C = 25^\circ\text{C}$	17		A
		$T_C = 100^\circ\text{C}$	12		A
I_{DM}	Pulsed Drain Current ^{note1}		60		A
I_{AR}	Avalanche Current		9		A
E_{AR}	Repetitive Avalanche Energy		7		mJ
E_{AS}	Single Pulse Avalanche Energy ^{note2}		93		mJ
P_D	Power Dissipation	$T_A = 25^\circ\text{C}$	3.8	3.8	W
$R_{\theta JC}$	Thermal Resistance, Junction to Case		2.15	2.8	$^\circ\text{C}/\text{W}$
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient		40	40	$^\circ\text{C}/\text{W}$
T_J, T_{STG}	Operating and Storage Temperature Range		-55 to +175		$^\circ\text{C}$



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

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} = 0V,I _D = 250μA	100	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = 100V,V _{GS} = 0V	-	-	25	μA
		V _{DS} = 80V,V _{GS} = 0V, T _J = 150℃	-	-	250	
I _{GSS}	Gate to Body Leakage Current	V _{GS} = ±20V	-	-	±100	nA
On Characteristics						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D = 250μA	2.0	-	4.0	V
R _{DS(on)}	Static Drain-Source On-Resistance note3	V _{GS} =10V, I _D =9A	-	-	90	mΩ
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} = 25V, V _{GS} = 0V, f = 1.0MHz	-	920	-	pF
C _{Oss}	Output Capacitance		-	130	-	pF
C _{rss}	Reverse Transfer Capacitance		-	19	-	pF
Q _g	Total Gate Charge	V _{DS} =80V, I _D =9A, V _{GS} = 10V	-	-	37	nC
Q _{gs}	Gate-Source Charge		-	-	7.2	nC
Q _{gd}	Gate-Drain(“Miller”) Charge		-	-	11	nC
Switching Characteristics						
t _{d(on)}	Turn-On Delay Time	V _{DD} = 50V, I _D =9A, R _G = 12Ω, V _{GS} = 10V	-	9.2	-	ns
t _r	Turn-On Rise Time		-	22	-	ns
t _{d(off)}	Turn-Off Delay Time		-	35	-	ns
t _f	Turn-Off Fall Time		-	25	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I _S	Maximum Continuous Drain to Source Diode Forward Current		-	-	17	A
I _{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	60	A
V _{SD}	Drain to Source Diode Forward Voltage	V _{GS} = 0V, I _S =9A, T _J = 25℃	-	-	1.3	V
t _{rr}	Reverse Recovery Time	T _J = 25℃, I _F =9A,	-	93	140	ns
Q _{rr}	Reverse Recovery Charge	di/dt =100A/μs	-	320	480	uC

Notes: 1. Repetitive Rating: Pulse width limited by maximum junction temperature

2. I_{AS} =9A, L=2.3mH, R_G =25Ω Starting T_J = 175°C

3. Pulse Test: Pulse width ≤ 400μs, Duty Cycle ≤ 2%

Typical Performance Characteristics

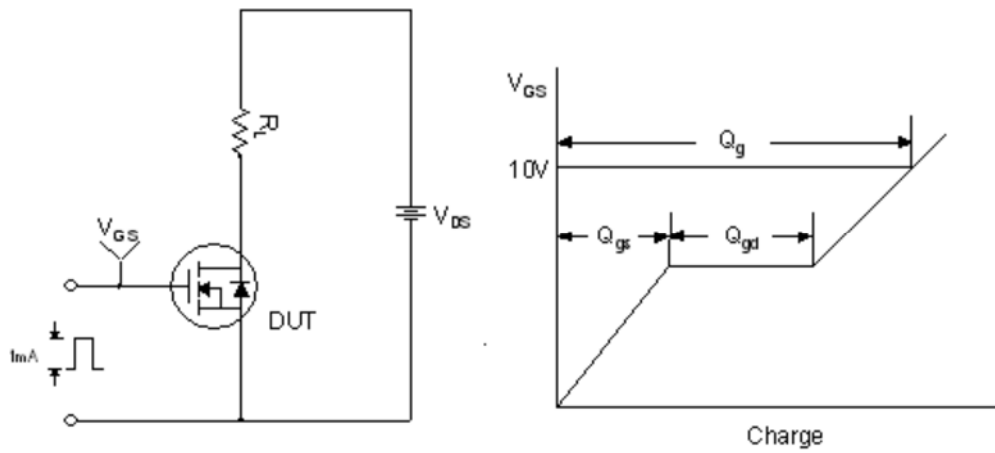


Figure 1. Gate Charge Test Circuit & Waveform

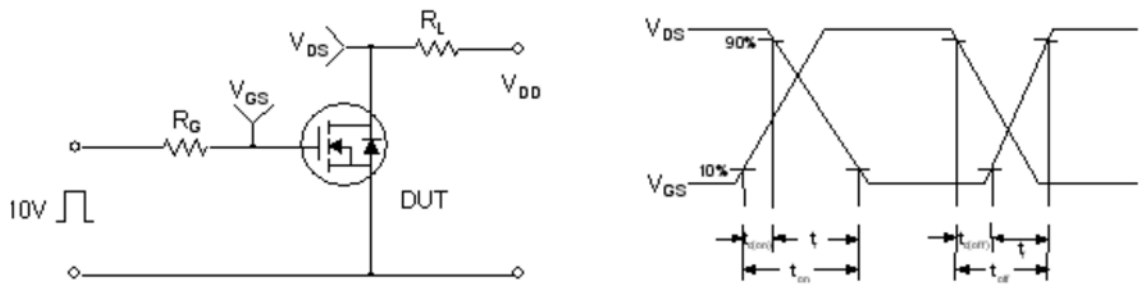


Figure 2. Resistive Switching Test Circuit & Waveforms

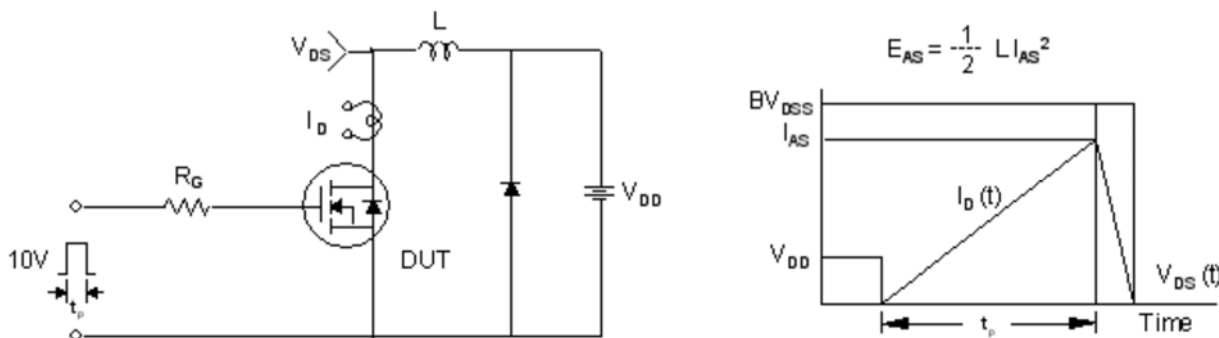


Figure 3. Unclamped Inductive Switching Test Circuit & Waveforms

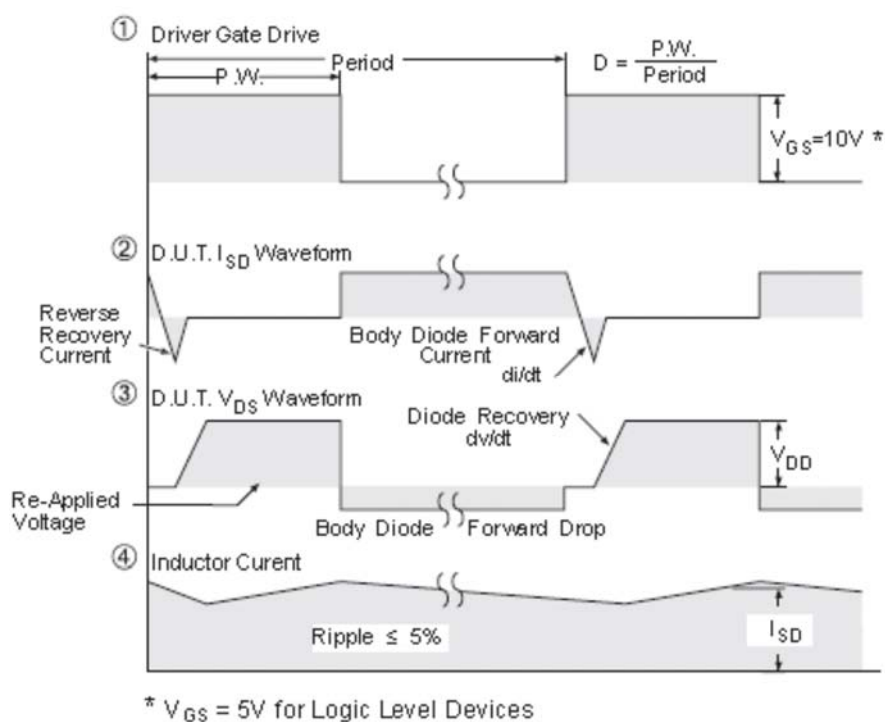
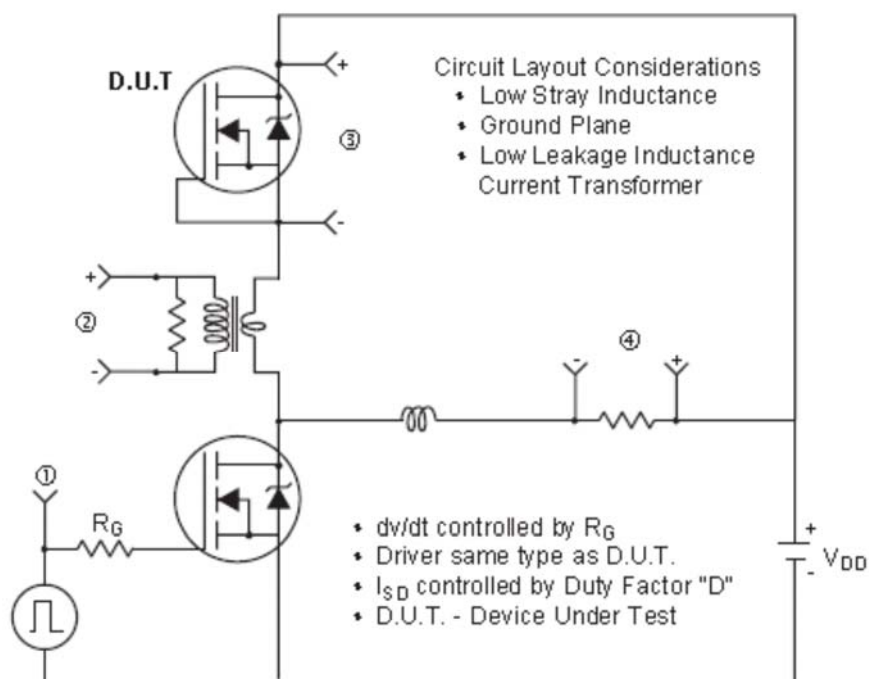
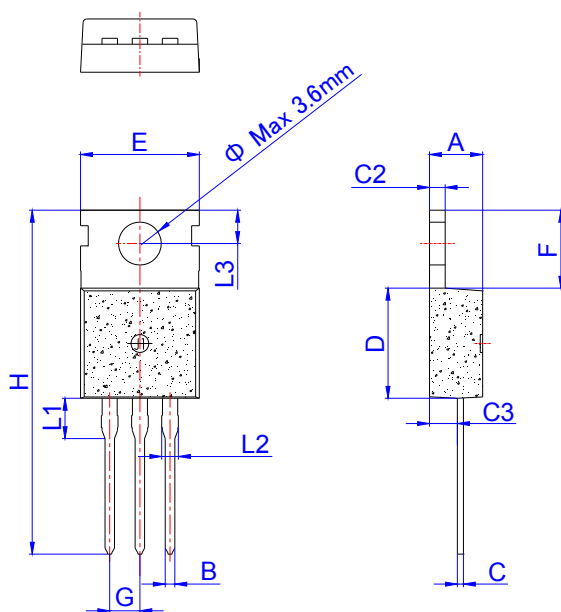


Figure 4. Peak Diode Recovery dv/dt Test Circuit & Waveforms (For N-channel)



Package Mechanical Data



TO-220C

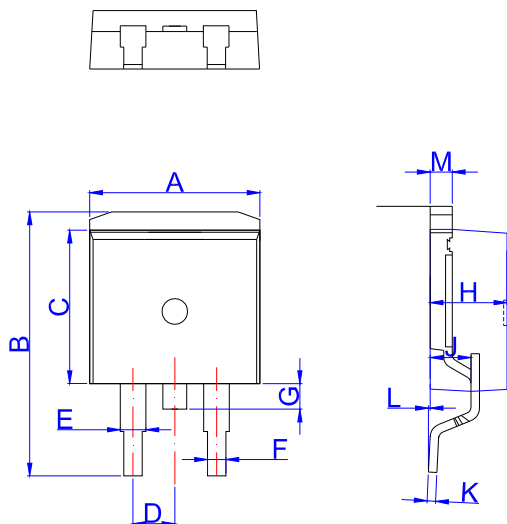
Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.40		4.60	0.173		0.181
B	0.70		0.90	0.028		0.035
C	0.45		0.60	0.018		0.024
C2	1.23		1.32	0.048		0.052
C3	2.20		2.60	0.087		0.102
D	8.90		9.90	0.350		0.390
E	9.90		10.3	0.390		0.406
F	6.30		6.90	0.248		0.272
G		2.54			0.1	
H	28.0		29.8	1.102		1.173
L1		3.39			0.133	
L2	1.14		1.70	0.045		0.067
L3	2.65		2.95	0.104		0.116
Φ		3.6			0.142	

Package Information-TO-220C

OUTLINE	TUBE (PCS)	INNER BOX (PCS)	PER CARTON (PCS)
TUBE	50	1,000	8,000



Package Mechanical Data



TO-263

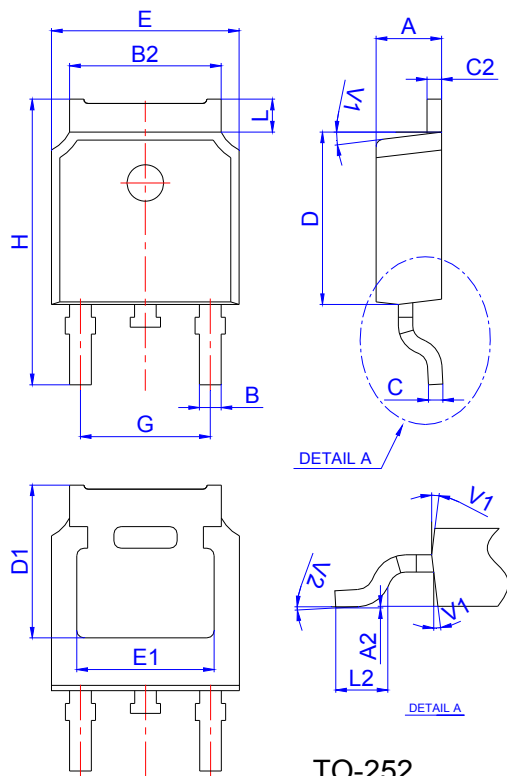
Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	9.90		10.20	0.390		0.402
B	14.70		15.80	0.579		0.622
C	9.4		9.6	0.37		0.378
D		2.54			0.100	
E	1.20		1.40	0.047		0.055
F	0.75		0.85	0.029		0.033
G			1.75			0.069
H	4.40		4.70	0.173		0.185
J	2.30		2.70	0.091		0.106
K	0.38		0.55	0.015		0.022
L	0	0.10	0.25	0	0.004	0.010
M	1.25		1.35	0.049		0.053

Package Information -TO-263

OUTLINE	TUBE (PCS)	INNER BOX (PCS)	PER CARTON (PCS)
TUBE	50	1,000	8,000



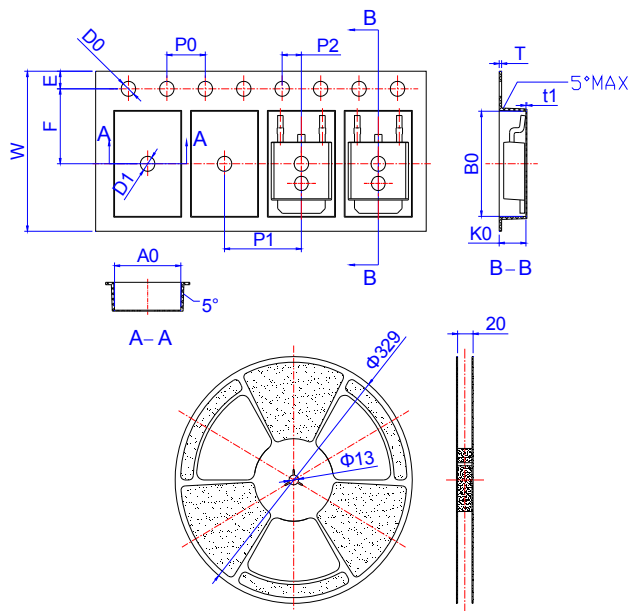
Package Mechanical Data



TO-252

Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.10		2.50	0.083		0.098
A2	0		0.10	0		0.004
B	0.66		0.86	0.026		0.034
B2	5.18		5.48	0.202		0.216
C	0.40		0.60	0.016		0.024
C2	0.44		0.58	0.017		0.023
D	5.90		6.30	0.232		0.248
D1	5.30REF			0.209REF		
E	6.40		6.80	0.252		0.268
E1	4.63			0.182		
G	4.47		4.67	0.176		0.184
H	9.50		10.70	0.374		0.421
L	1.09		1.21	0.043		0.048
L2	1.35		1.65	0.053		0.065
V1		7°			7°	
V2	0°		6°	0°		6°

Reel Specification-TO-252



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
W	15.90	16.00	16.10	0.626	0.630	0.634
E	1.65	1.75	1.85	0.065	0.069	0.073
F	7.40	7.50	7.60	0.291	0.295	0.299
D0	1.40	1.50	1.60	0.055	0.059	0.063
D1	1.40	1.50	1.60	0.055	0.059	0.063
P0	3.90	4.00	4.10	0.154	0.157	0.161
P1	7.90	8.00	8.10	0.311	0.315	0.319
P2	1.90	2.00	2.10	0.075	0.079	0.083
A0	6.85	6.90	7.00	0.270	0.271	0.276
B0	10.45	10.50	10.60	0.411	0.413	0.417
K0	2.68	2.78	2.88	0.105	0.109	0.113
T	0.24		0.27	0.009		0.011
t1	0.10			0.004		
10P0	39.80	40.00	40.20	1.567	1.575	1.583

OUTLINE	REEL (PCS)	PER CARTON (PCS)	TAPE & REEL
TAPING	2,500	25,000	13inch



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