Description

JMP N-channel MOSFET

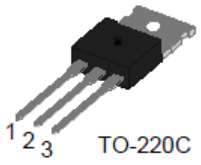
Features

- 100V, 33A
- $R_{DS(ON)}$ ≤44mΩ @ V_{GS} = 10V, I_D =16A
- Fast Switching
- 100% Avalanche Tested
- Improved dv/dt Capability

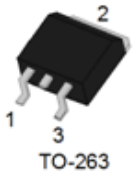
Application

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

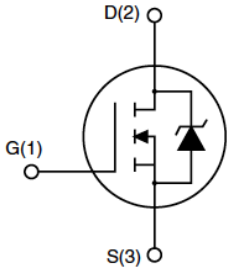
Package



JMPC540A



JMPE540A



Absolute Maximum Ratings (T_C=25℃ unless otherwise specified)

Symbol	Parameter		Max.	Units
V_{DSS}	Drain-Source Voltage		100	V
V_{GSS}	Gate-Source Voltage		±20	V
I_D	Continuous Drain Current	T_C = 25℃	33	A
		T_C = 100℃	23	A
I_{DM}	Pulsed Drain Current note1		110	A
E_{AS}	Single Pulsed Avalanche Energy note2		185	mJ
P_D	Power Dissipation	T_C = 25℃	130	W
$R_{\theta JC}$	Thermal Resistance, Junction to Case		1.15	℃/W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient		62	℃/W
T_J, T_{STG}	Operating and Storage Temperature Range		-55 to +175	℃

Electrical Characteristics (T_C=25℃ 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 = 16A	-	-	44	mΩ
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS} = 25V, V_{GS} = 0V, f = 1.0MHz	-	1960	-	pF
C_{oss}	Output Capacitance		-	250	-	pF
C_{rss}	Reverse Transfer Capacitance		-	40	-	pF
Q_g	Total Gate Charge	V_{DS} = 80V, I_D =16A, V_{GS} = 10V	-	-	71	nC
Q_{gs}	Gate-Source Charge		-	-	14	nC
Q_{gd}	Gate-Drain(“Miller”) Charge		-	-	21	nC
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	V_{DD} = 50V, I_D =16A, R_G = 5.1Ω, V_{GS} = 10V	-	11	-	ns
t_r	Turn-On Rise Time		-	35	-	ns
$t_{d(off)}$	Turn-Off Delay Time		-	39	-	ns
t_f	Turn-Off Fall Time		-	35	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	33	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	110	A
V_{SD}	Drain to Source Diode Forward Voltage	V_{GS} = 0V, I_{SD}= 16A, T_J = 25℃	-	-	1.2	V
t_{rr}	Reverse Recovery Time	T_J = 25℃, I_F = 16A, di/dt =100A/μs	-	115	170	ns
Q_{rr}	Reverse Recovery Charge		-	505	760	uC

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

2. I_{AS} =16A, L=1.5mH, R_G =25Ω Starting T_J = 175°C

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

Typical Performance Characteristics

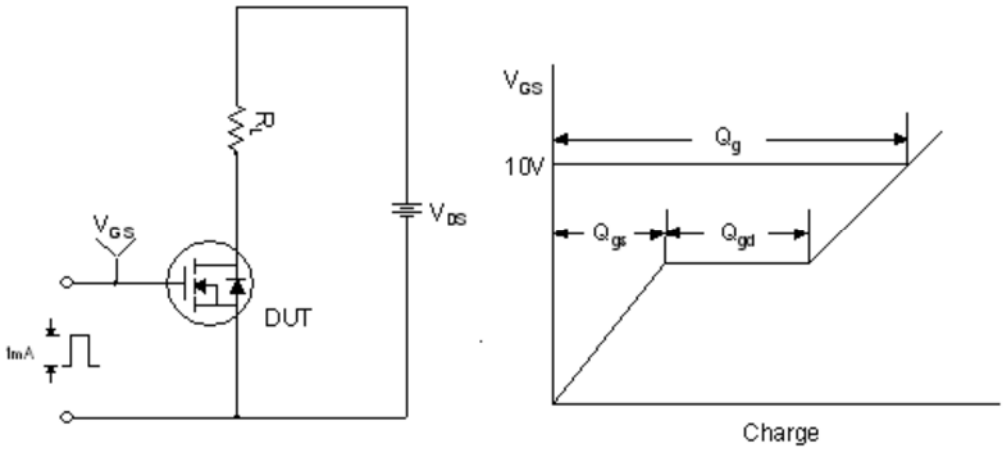


Figure 1. Gate Charge Test Circuit & Waveform

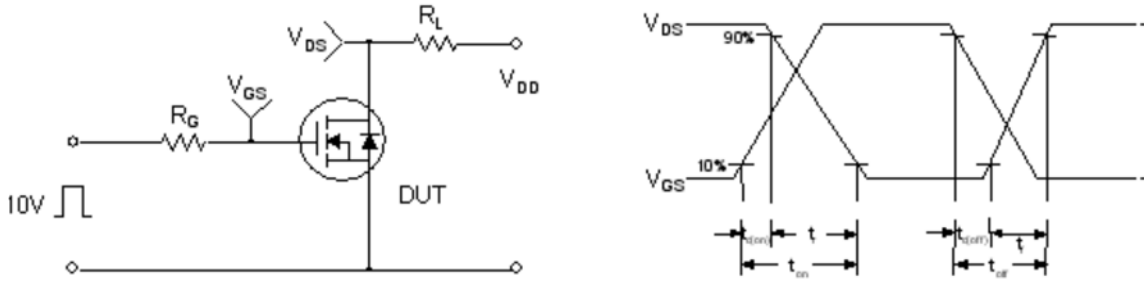


Figure 2. Resistive Switching Test Circuit & Waveforms

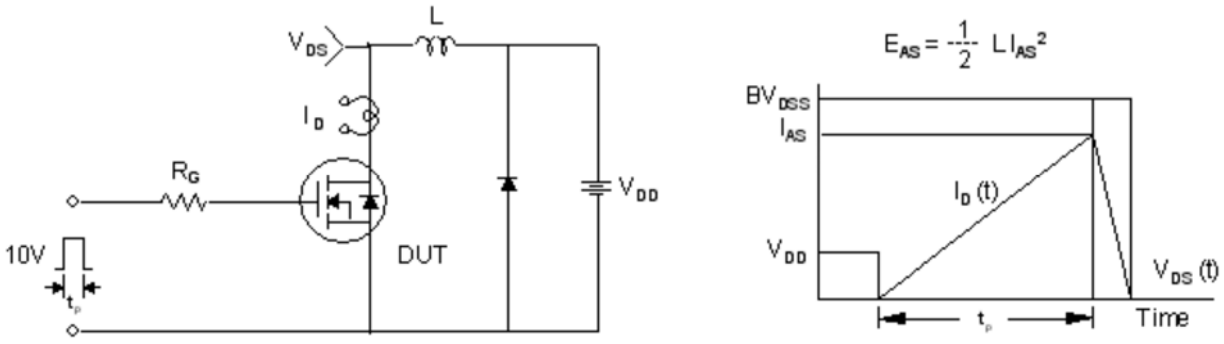


Figure 3. Unclamped Inductive Switching Test Circuit & Waveforms

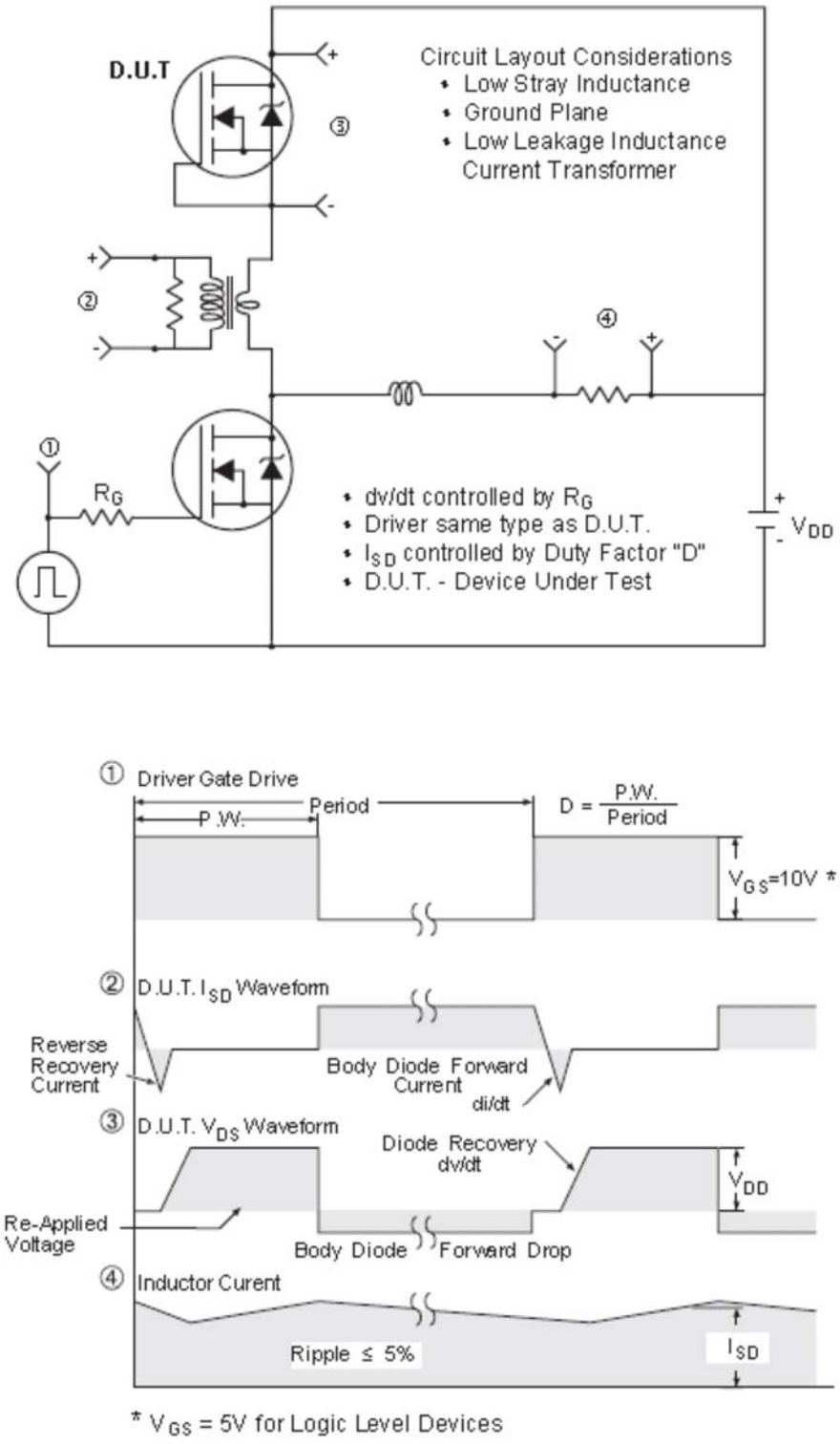
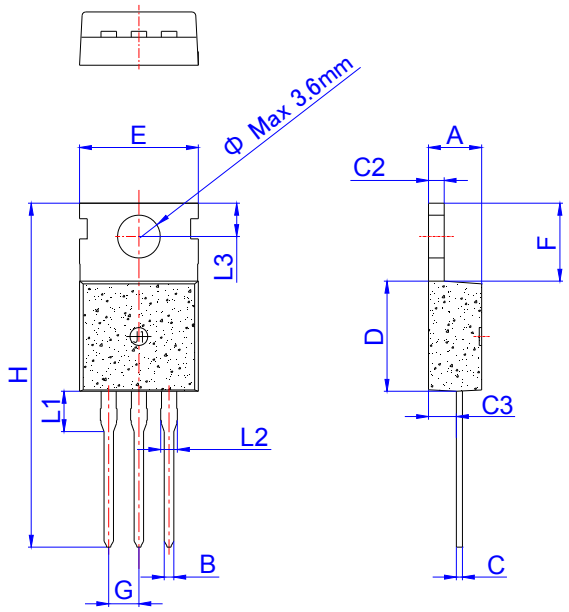


Figure 4. Peak Diode Recovery dv/dt Test Circuit & Waveforms (For N-channel)

Package Mechanical Data



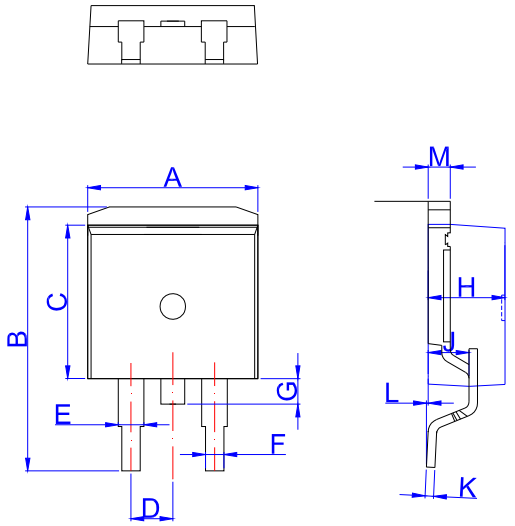
TO-220C

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

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