JJMICROELECTRONICS

200V, 34A, 65mΩ N-channel Power Planar MOSFET

JMPC34N20BJ

Features

- Excellent $R_{DS(ON)}$ and Low Gate Charge
- 100% UIS Tested
- 100% ΔVds Tested
- Halogen-free; RoHS-compliant

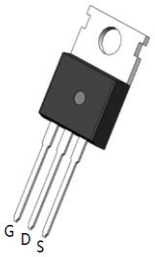
Applications

- Load Switch
- PWM Application
- Power Management

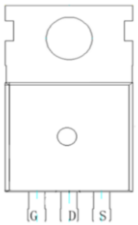
Product Summary

Parameters	Value	Unit
V_{DSS}	200	V
$V_{GS(th)_Typ}$	3.0	V
I_D(@V_{GS}=10V)	34	A
$R_{DS(ON)_Typ}$(@V_{GS}=10V	65	mΩ

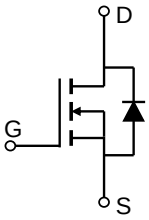
RoHS



TO-220C-3L Top View



Pin Assignment



Schematic Diagram

Ordering Information

Device	Marking	MSL	Form	Package	Tube(pcs)	Per Carton (pcs)
JMPC34N20BJ	JMPC34N20BJ	N/A	Tube	TO-220C-3L	50	5000

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

Symbol	Parameter		Value	Unit
V_{DS}	Drain-to-Source Voltage		200	V
V_{GS}	Gate-to-Source Voltage		±30	V
I_D	Continuous Drain Current	T_C = 25°C	34	A
		T_C = 100°C	21	
I_{DM}	Pulsed Drain Current (1)		Refer to Fig.4	A
E_{AS}	Single Pulsed Avalanche Energy (2)		794	mJ
P_D	Power Dissipation	T_C = 25°C	208	W
		T_C = 100°C	83	
T_J, T_{STG}	Junction & Storage Temperature Range		-55 to 150	°C

Thermal Characteristics

Symbol	Parameter	Max	Unit
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient(3)	72	°C/W
$R_{\theta JC}$	Thermal Resistance, Junction to Case	0.6	

All product information is copyrighted and subject to legal disclaimers.

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	200	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} =200V, 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	1.9	3.0	3.5	V
$R_{DS(ON)}$	Static Drain-Source ON-Resistance(4)	V_{GS} = 10V, I_D = 17A	-	65	85	mΩ
Dynamic Characteristics						
R_g	Gate Resistance	f = 1MHz	-	1.9	-	Ω
C_{iss}	Input Capacitance	V_{GS} = 0V, V_{DS} = 100V, f = 1MHz	1412	1977	2669	pF
C_{oss}	Output Capacitance		114	159	215	pF
C_{rss}	Reverse Transfer Capacitance		19	26	36	pF
Q_g	Total Gate Charge	V_{GS} = 0 to 10V V_{DS} = 100V, I_D = 34A	33	47	63	nC
Q_{gs}	Gate Source Charge		9	12	17	nC
Q_{gd}	Gate Drain("Miller") Charge		13	18	25	nC
Switching Characteristics						
$t_{d(on)}$	Turn-On DelayTime	V_{GS} = 10V, V_{DD} = 100V I_D= 34A, R_{GEN} = 24Ω	-	23	-	ns
t_r	Turn-On Rise Time		-	84	-	ns
$t_{d(off)}$	Turn-Off DelayTime		-	110	-	ns
t_f	Turn-Off Fall Time		-	77	-	ns
Body Diode Characteristics						
I_S	Maximum Continuous Body Diode Forward Current		-	-	34	A
I_{SM}	Maximum Pulsed Body Diode Forward Current		-	-	134	A
V_{SD}	Body Diode Forward Voltage	V_{GS} = 0V, I_S = 17A	-		1.2	V
trr	Body Diode Reverse Recovery Time	I_F = 34A, di/dt = 100A/us	125	175	236	ns
Qrr	Body Diode Reverse Recovery Charge		-	1301	-	nC

Notes:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
2. E_{AS} condition: Starting T_J=25C, V_{DD}=50V, V_G=10V, R_G=25ohm, L=10mH, I_{AS}=12.6A, V_{DD}=0V during time in avalanche.
3. $R_{\theta JA}$ 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%.

All product information is copyrighted and subject to legal disclaimers.

Typical Performance Characteristics

Figure 1: Power De-rating

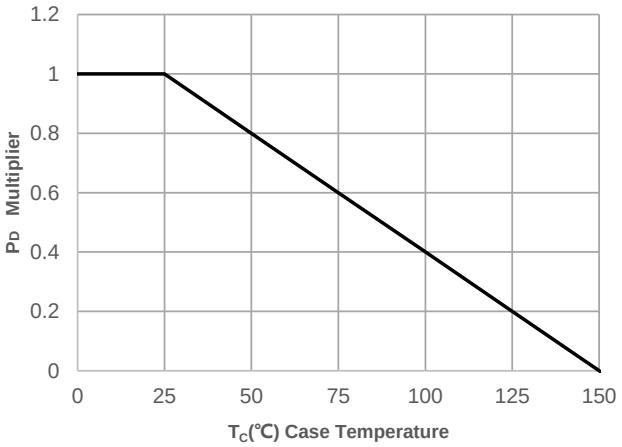


Figure 2: Current De-rating

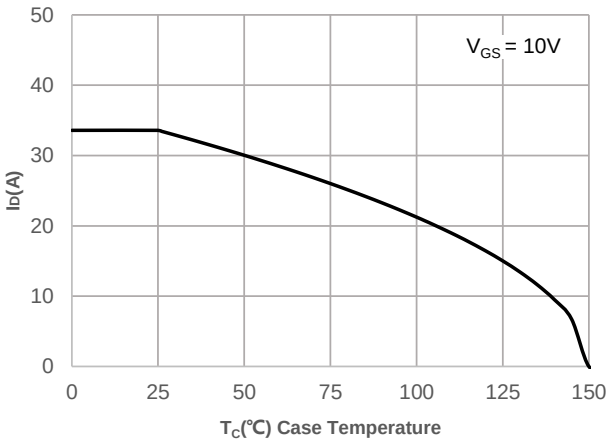


Figure 3: Normalized Maximum Transient Thermal Impedance

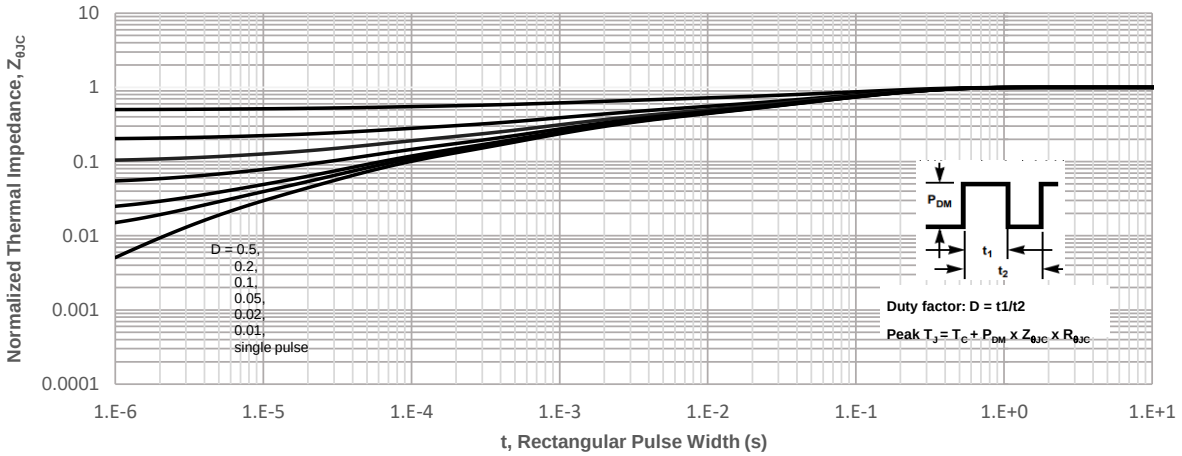
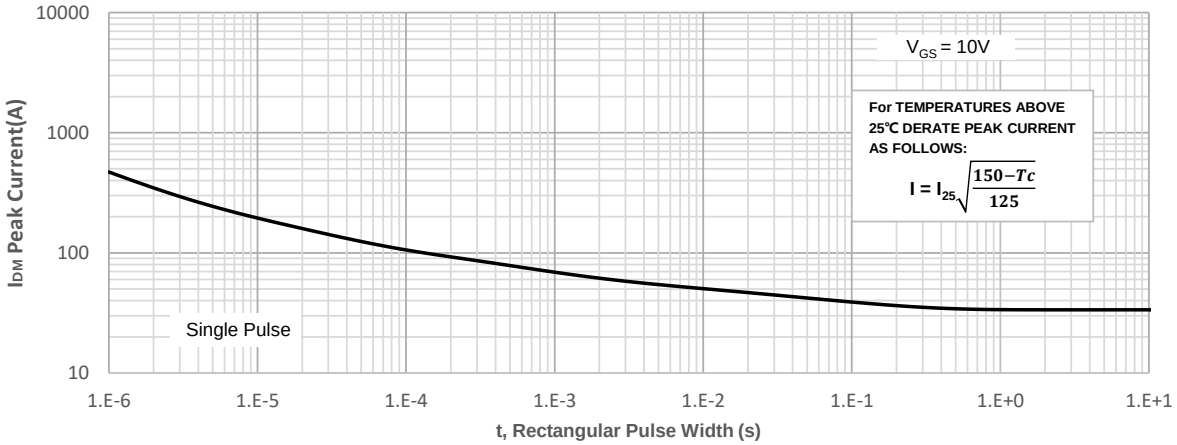


Figure 4: Peak Current Capacity



All product information is copyrighted and subject to legal disclaimers.

Typical Performance Characteristics

Figure 5: Output Characteristics

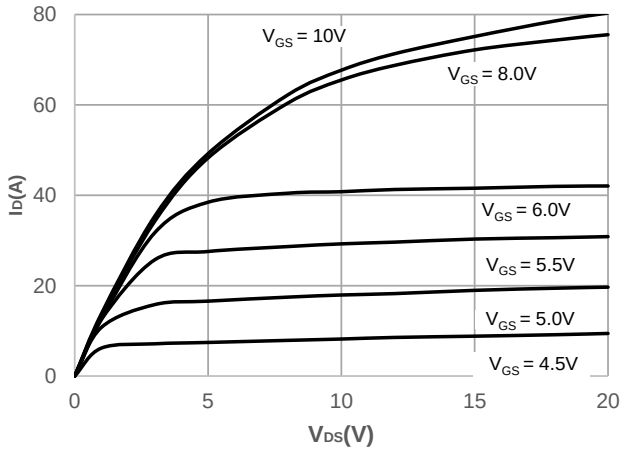


Figure 6: Typical Transfer Characteristics

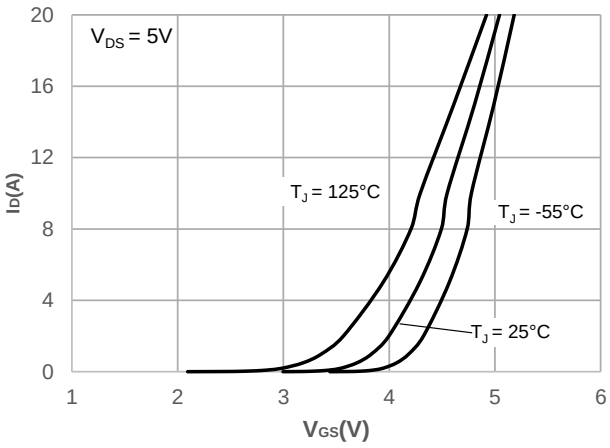


Figure 7: On-resistance vs. Drain Current

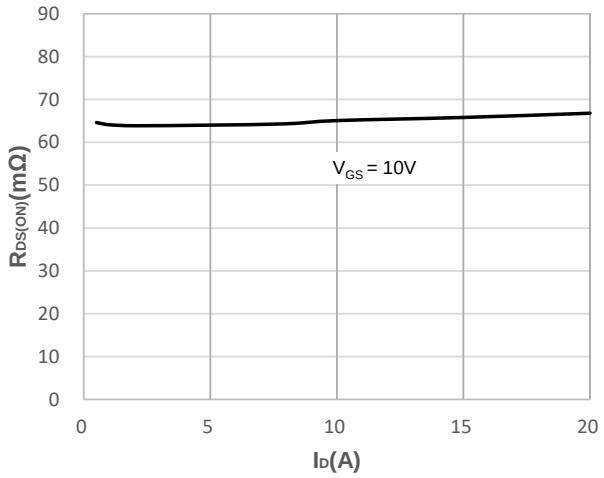


Figure 8: Body Diode Characteristics

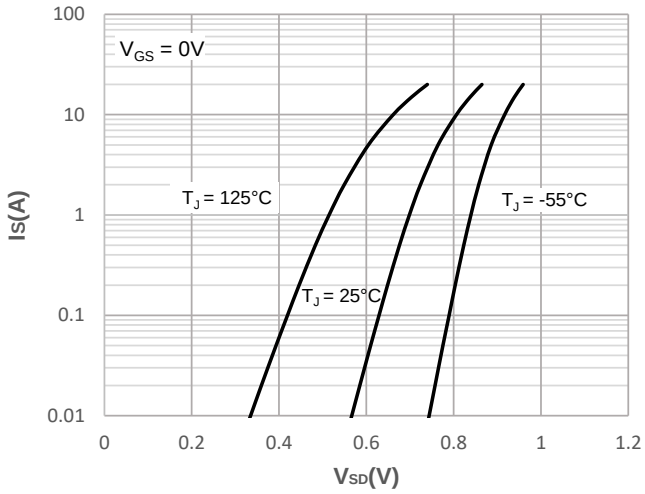


Figure 9: Gate Charge Characteristics

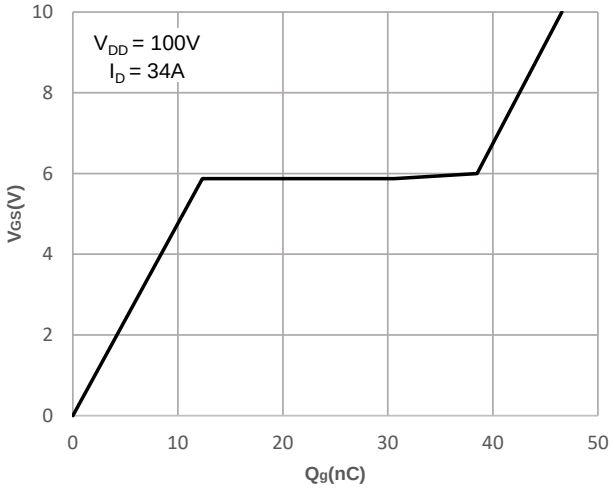
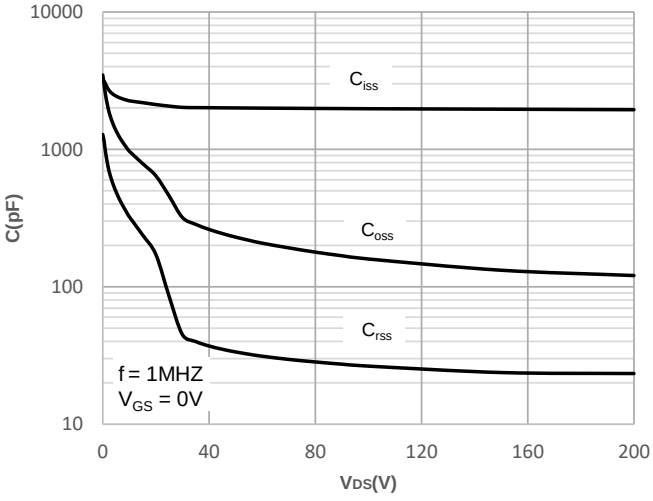


Figure 10: Capacitance Characteristics



All product information is copyrighted and subject to legal disclaimers.

Typical Performance Characteristics

Figure 11: Normalized Breakdown voltage vs. Junction Temperature

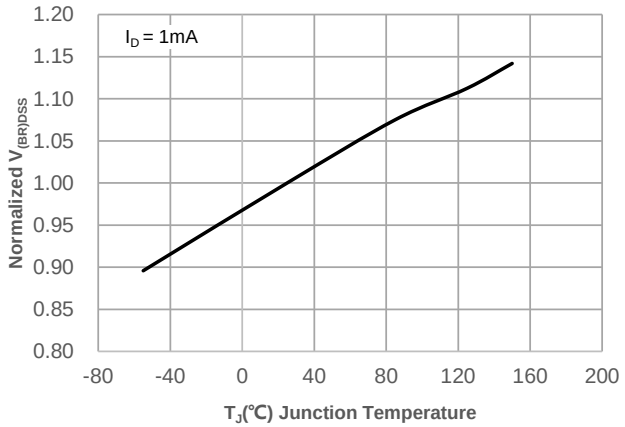


Figure 12: Normalized on Resistance vs. Junction Temperature

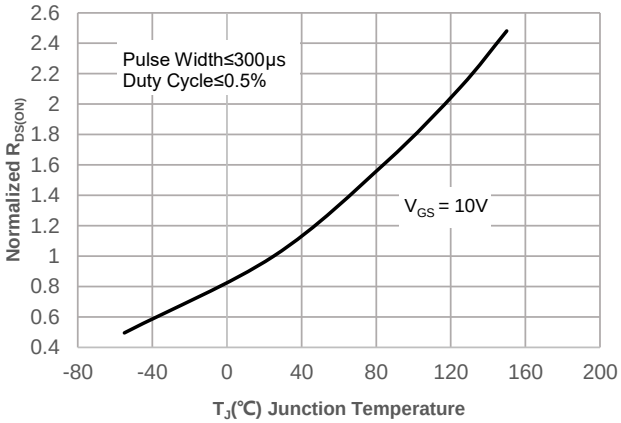


Figure 13: Normalized Threshold Voltage vs. Junction Temperature

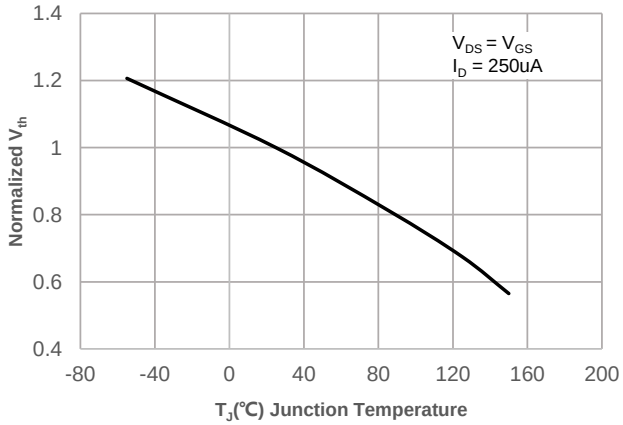


Figure 14: $R_{DS(ON)}$ vs. V_{GS}

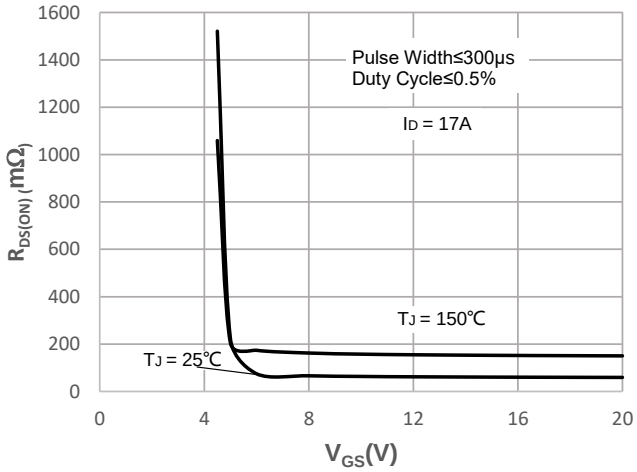
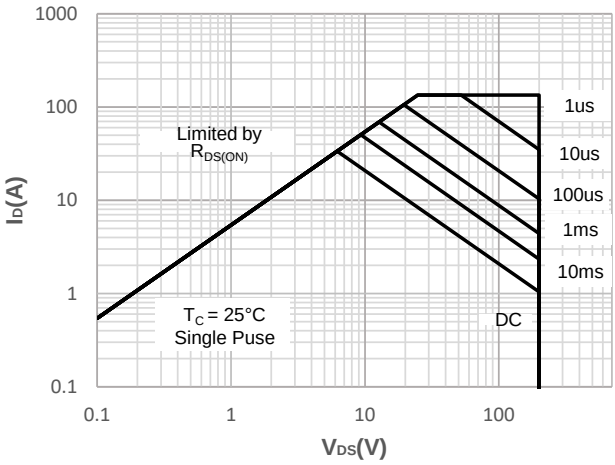


Figure 15: Maximum Safe Operating Area



All product information is copyrighted and subject to legal disclaimers.

Test Circuit

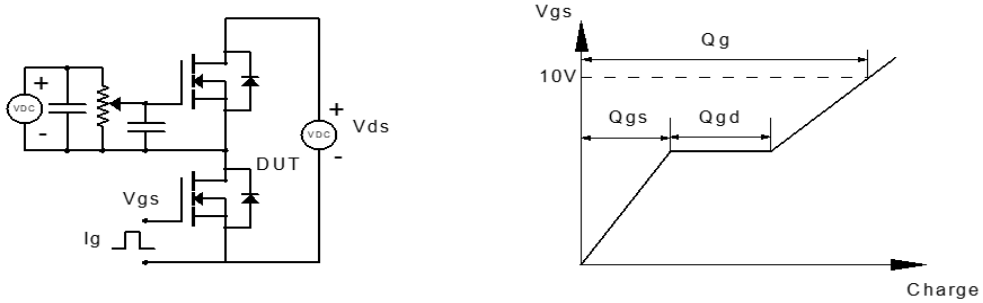


Figure 1: Gate Charge Test Circuit & Waveform

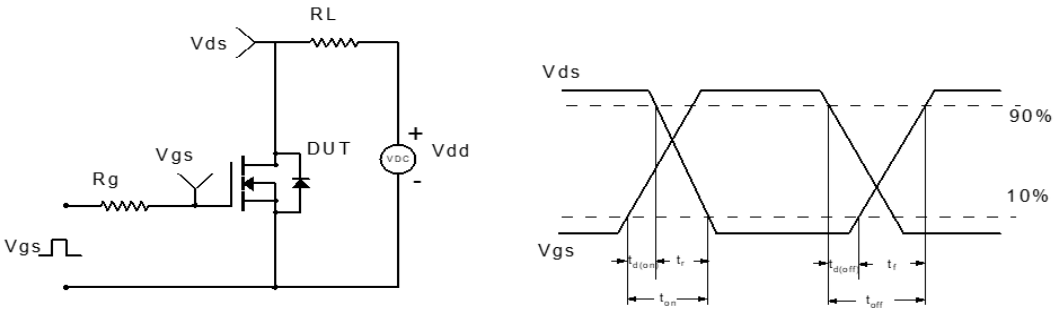


Figure 2: Resistive Switching Test Circuit & Waveform

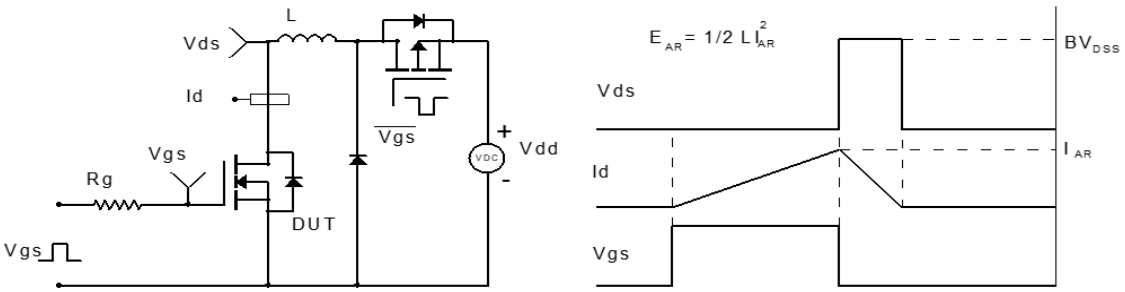


Figure 3: Unclamped Inductive Switching Test Circuit& Waveform

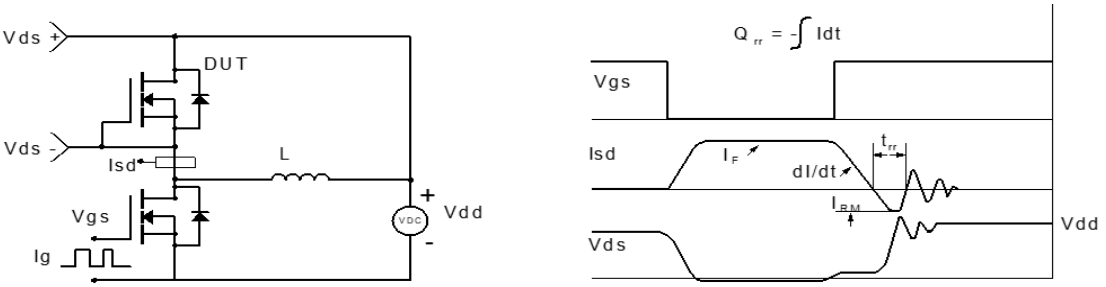
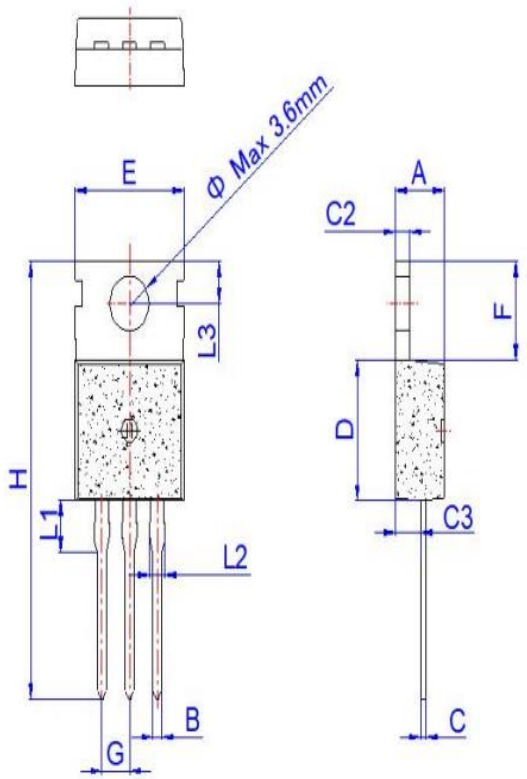


Figure 4: Diode Recovery Test Circuit & Waveform

All product information is copyrighted and subject to legal disclaimers.

Package Mechanical Data(TO-220C-3L)



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	

Information furnished in this document is believed to be accurate and reliable.
However, Jiangsu JieJie Microelectronics Co.,Ltd assumes no responsibility for the consequences of use without consideration for such information nor use beyond it.
Information mentioned in this document is subject to change without notice, apart from that when an agreement is signed, Jiangsu JieJie complies with the agreement.
Products and information provided in this document have no infringement of patents. Jiangsu JieJie assumes no responsibility for any infringement of other rights of third parties which may result from the use of such products and information.

is a registered trademark of Jiangsu JieJie Microelectronics Co.,Ltd.