JMTQ080P03A

Features

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

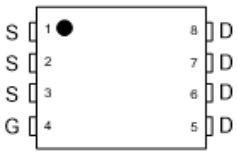
Applications

- Load Switch
- PWM Application
- Power Management

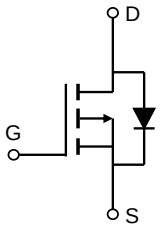
Product Summary

Parameters	Value	Unit
V_{DSS}	-30	V
$V_{GS(th)\_Typ}$	-1.5	V
I_D(@V_{GS}=-10V)	-50	A
$R_{DS(ON)\_Typ}$(@V_{GS}=-10V)	5.9	mΩ
$R_{DS(ON)\_Typ}$(@V_{GS}=-4.5V)	8.1	mΩ

PDFN3X3-8L



Pin Assignment



Schematic

Ordering Information

Device	Marking	MSL	Form	Package	Reel(pcs)	Per Carton (pcs)
JMTQ080P03A	Q080P03A	1	Tape&Reel	PDFN3x3-8L	5000	50000

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

Symbol	Parameter		Value	Unit
V_{DS}	Drain-to-Source Voltage		-30	V
V_{GS}	Gate-to-Source Voltage		±20	V
I_D	Continuous Drain Current	T_C = 25°C	-50	A
		T_C = 100°C	-32	
I_{DM}	Pulsed Drain Current [1]		Refer to Fig.4	A
E_{AS}	Single Pulsed Avalanche Energy [2]		133	mJ
P_D	Power Dissipation	T_C = 25°C	30	W
		T_C = 100°C	12	
T_J, T_{STG}	Junction & Storage Temperature Range		-55 to 150	°C

Thermal Characteristics

Symbol	Parameter	Max	Unit
R	Thermal Resistance, Junction to Ambient[3]	41	°C/W
R	Thermal Resistance, Junction to Case	4.2	

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	-30	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = -30V, V_{GS} = 0V	-	-	-1.0	μA
I_{GSS}	Gate-Body Leakage Current	V_{DS} = 0V, V_{GS} = ±20V	-	-	±100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = -250μA	-1.1	-1.5	-2.0	V
$R_{DS(ON)}$	Static Drain-Source ON-Resistance(4)	V_{GS} = -10V, I_D = -20A	-	5.9	7.4	mΩ
		V_{GS} = -4.5V, I_D = -10A	-	8.1	10.1	mΩ
Dynamic Characteristics						
R_g	Gate Resistance	f = 1MHz	-	11.5	-	Ω
C_{iss}	Input Capacitance	V_{GS} = 0V, V_{DS} = -15V, f = 1MHz	2405	3366	4545	pF
C_{oss}	Output Capacitance		336	471	635	pF
C_{rss}	Reverse Transfer Capacitance		232	324	438	pF
Q_g	Total Gate Charge	V_{GS} = 0 to -10V, V_{DS} = -15V, I_D = -10A	-	59	-	nC
Q_{gs}	Gate Source Charge		-	9.5	-	nC
Q_{gd}	Gate Drain("Miller") Charge		-	14	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-On DelayTime	V_{GS} = -10V, V_{DD} = -15V, I_D= -10A, R_{GEN} = 2.7Ω	-	6.8	-	ns
t_r	Turn-On Rise Time		-	5.7	-	ns
$t_{d(off)}$	Turn-Off DelayTime		-	112	-	ns
t_f	Turn-Off Fall Time		-	78	-	ns
Body Diode Characteristics						
I_S	Maximum Continuous Body Diode Forward Current		-	-	-50	A
I_{SM}	Maximum Pulsed Body Diode Forward Current		-	-	-202	A
V_{SD}	Body Diode Forward Voltage	V_{GS} = 0V, I_S = -20A	-		-1.2	V
trr	Body Diode Reverse Recovery Time	I_F = -10A, di/dt = 100A/us	15	21	29	ns
Qrr	Body Diode Reverse Recovery Charge		-	9.8	-	nC

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

2. E_{AS} condition: Starting T_J=25C, V_{DD}=-15V, V_{GS}=-10V, R_G=25ohm, L=0.5mH, I_{AS}=-23.1A, V_{DD}=0V during time in avalanche.

3. R is measured with the device mounted on a 1inch^2 pad of 2oz copper FR4 PCB.

4. Pulse Test: Pulse Width≤ ≤0.5%.

Typical Performance Characteristics

Figure 1: Power De-rating

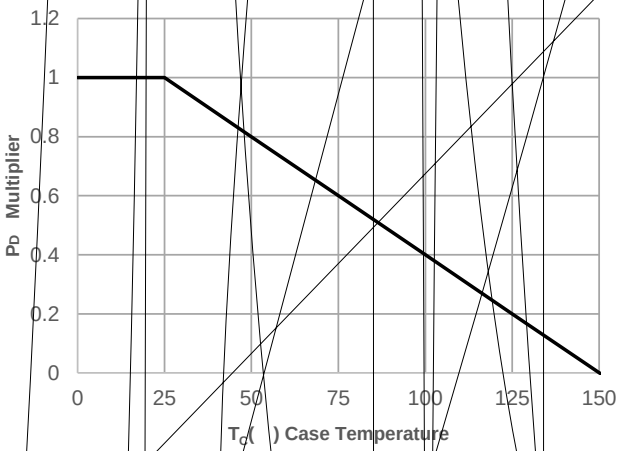
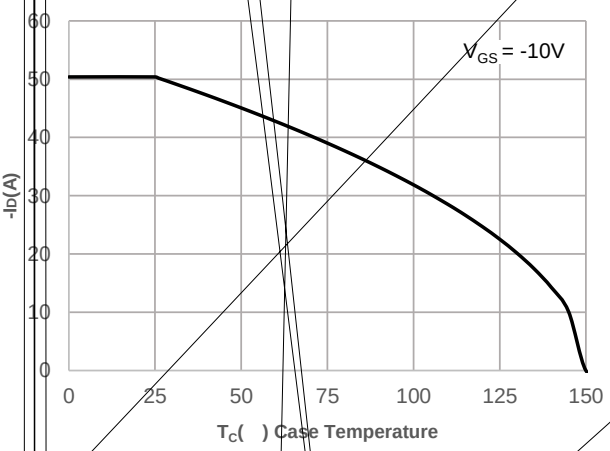
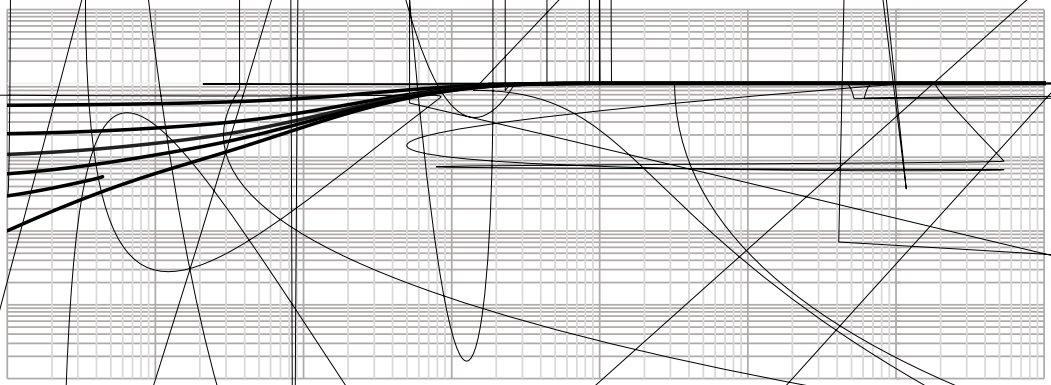


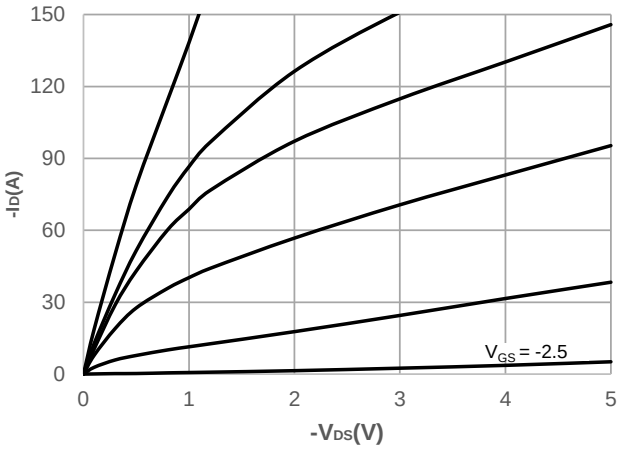
Figure 2: Current De-rating





Typical Performance Characteristics

Figure 5: Output Characteristics



Typical Performance Characteristics

Figure 11: Normalized Breakdown voltage vs. Junction Temperature

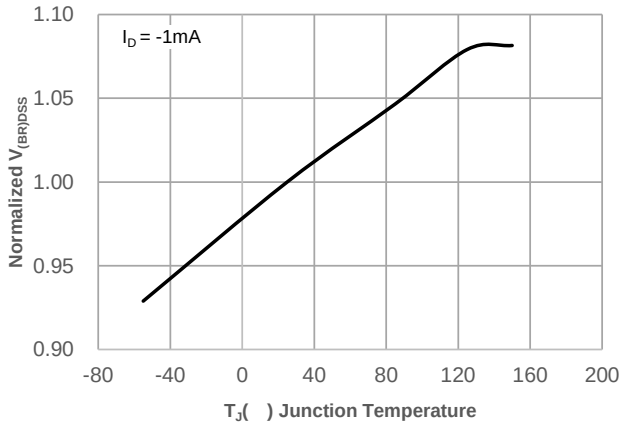


Figure 12: Normalized on Resistance vs. Junction Temperature

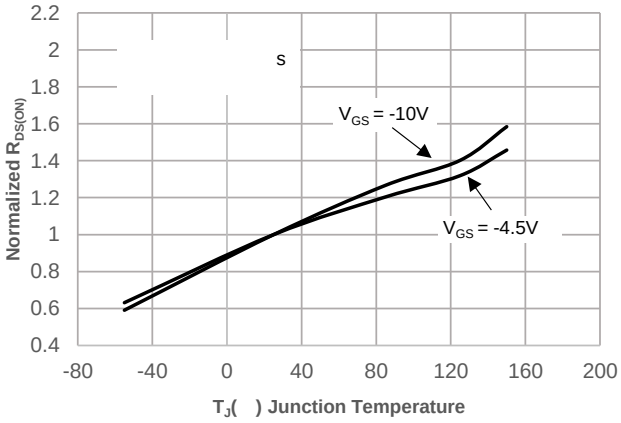


Figure 13: Normalized Threshold Voltage vs. Junction Temperature

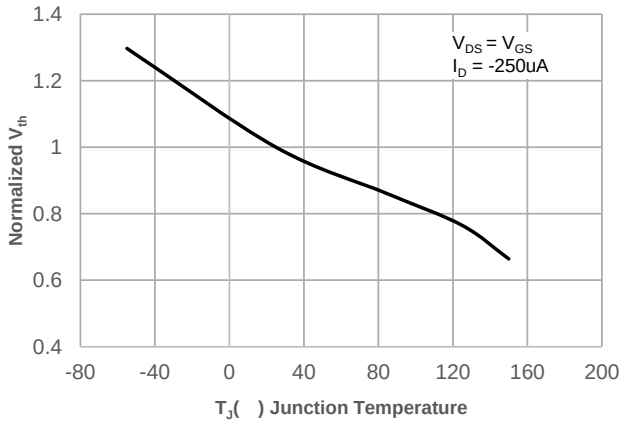


Figure 14: $R_{DS(ON)}$ vs. V_{GS}

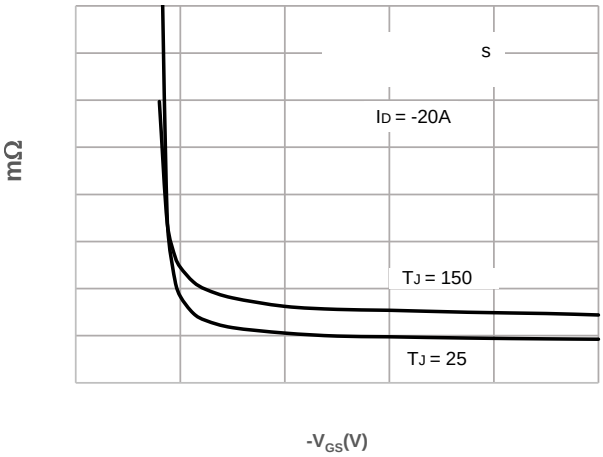
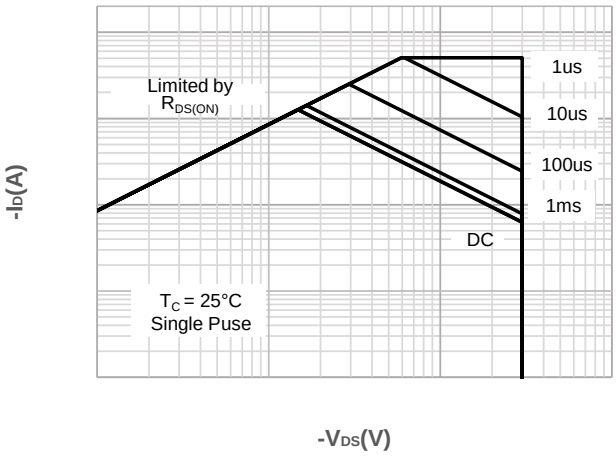


Figure 15: Maximum Safe Operating Area



Test Circuit

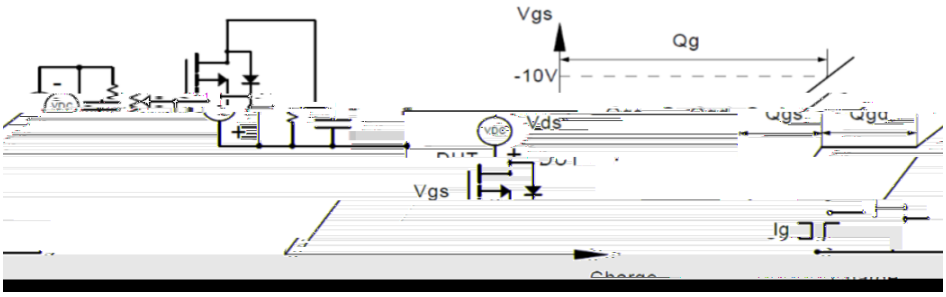


Figure 1: Gate Charge Test Circuit & Waveform

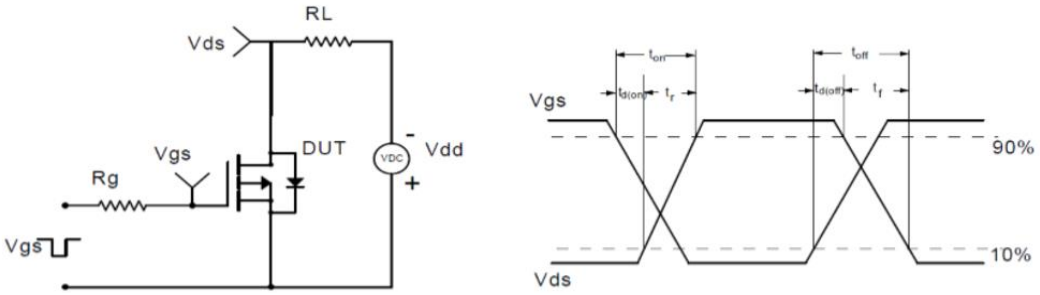


Figure 2: Resistive Switching Test Circuit & Waveform

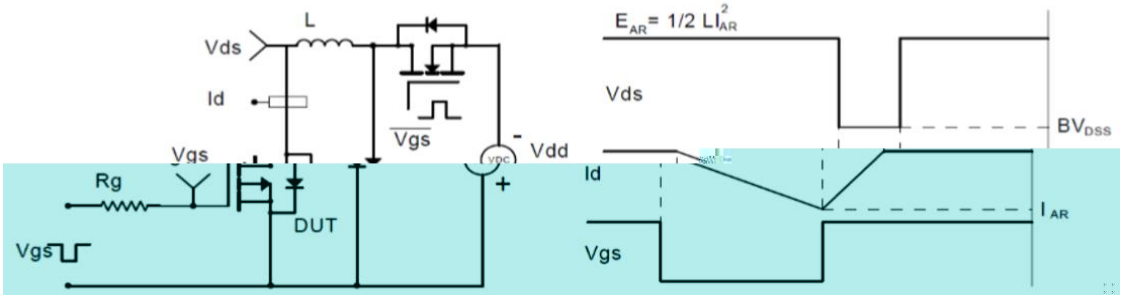


Figure 3: Unclamped Inductive Switching Test Circuit& Waveform

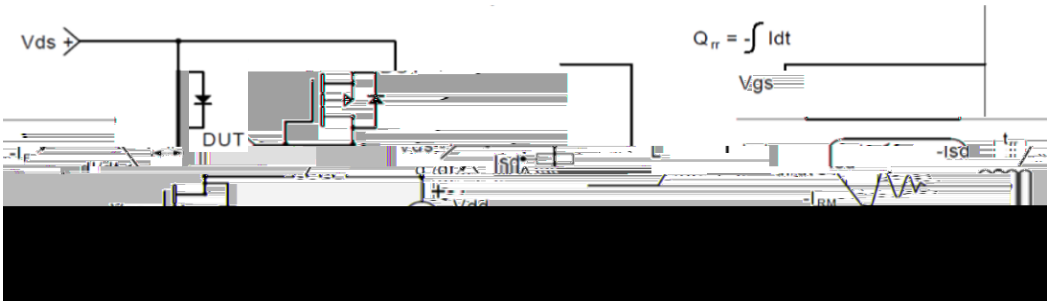
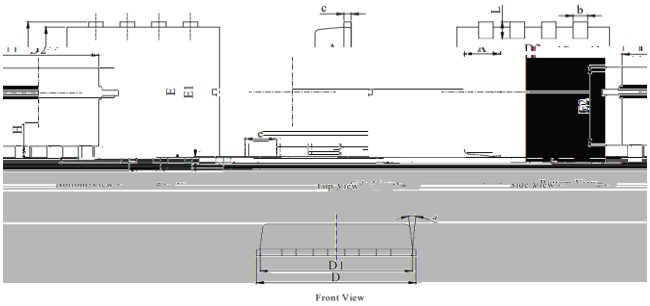


Figure 4: Diode Recovery Test Circuit & Waveform

Package Mechanical Data(PDFN3x3-8L)

Package Outline



Front View

NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M,1994.
2. ALL DIMNESIONS IN MILLIMETER (ANNGLE IN DEGREE).

	MILLIMETER		
	MIN	NOM	MAX
A	0.70	0.75	0.80
b	0.25	0.30	0.35
c	0.10	0.20	0.25
D	3.00	3.15	3.25
D1	2.95	3.05	3.15
D2	2.39	2.49	2.59
E	3.00	3.15	3.25
E1	2.95	3.05	3.15
E2	1.60	1.70	1.80
e		0.65BSC	
H	0.30	0.40	0.50
L	0.25	0.40	0.50
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Recommended Soldering Footprint

SIONS:MILLIMETERS DIMEN