



Description

JMT P-channel Enhancement Mode Power MOSFET

Features

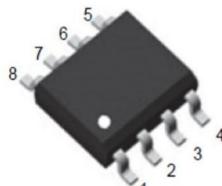
- $V_{DS} = -20V, I_D = -15A$
- $R_{DS(ON)} < 9m\Omega @ V_{GS} = -4.5V$
- $R_{DS(ON)} < 13m\Omega @ V_{GS} = -2.5V$
- Advanced Trench Technology
- Excellent $R_{DS(ON)}$ and Low Gate Charge
- Lead free product is acquired

Application

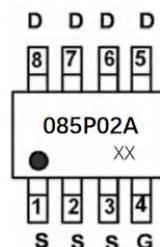
- PWM Applications
- Load Switch



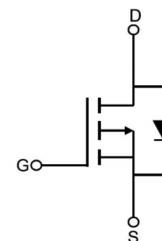
100% UIS TESTED!
100% ΔV_{ds} TESTED!



SOP-8 top view



Marking and pin Assignment



Schematic Diagram

Package Marking and Ordering Information

Device Marking	Device	OUTLINE	Device Package	Reel Size	Reel (PCS)	Per Carton (PCS)
085P02A	JMTPO85P02A	TAPING	SOP-8	13inch	4000	48000

Absolute Maximum Ratings ($T_A = 25^\circ C$ unless otherwise specified)

Symbol	Parameter		Max.	Units
V_{DSS}	Drain-Source Voltage		-20	V
V_{GSS}	Gate-Source Voltage		± 12	V
I_D	Continuous Drain Current	$T_A = 25^\circ C$	-15	A
		$T_A = 100^\circ C$	-9.8	
I_{DM}	Pulsed Drain Current ^{note1}		-60	A
EAS	Single Pulsed Avalanche Energy ^{note2}		56	mJ
P_D	Power Dissipation	$T_A = 25^\circ C$	3.3	W
R_{QJA}	Thermal Resistance, Junction to Ambient		38	$^\circ C / W$
T_J, T_{STG}	Operating and Storage Temperature Range		-55 to +150	$^\circ C$

**Electrical Characteristics** ($T_J=25^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristics						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D = -250\mu\text{A}$	-20	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = -20V, V_{GS} = 0V,$	-	-	-1	μA
I_{GSS}	Gate to Body Leakage Current	$V_{DS} = 0V, V_{GS} = \pm 12V$	-	-	± 100	nA
On Characteristics						
$V_{GS(\text{th})}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = -250\mu\text{A}$	-0.35	-0.7	-1.0	V
$R_{DS(\text{on})}$ note3	Static Drain-Source on-Resistance	$V_{GS} = -4.5V, I_D = -15A$	-	7	9	$\text{m}\Omega$
		$V_{GS} = -2.5V, I_D = -12A$	-	9	13	
Dynamic Characteristics						
C_{iss}	Input Capacitance	$V_{DS} = -10V, V_{GS} = 0V,$ $f = 1.0\text{MHz}$	-	4600	-	pF
C_{oss}	Output Capacitance		-	460	-	pF
C_{rss}	Reverse Transfer Capacitance		-	459	-	pF
Q_g	Total Gate Charge	$V_{DS} = -10V, I_D = -15A,$ $V_{GS} = -4.5V$	-	56	-	nC
Q_{gs}	Gate-Source Charge		-	8	-	nC
Q_{gd}	Gate-Drain("Miller") Charge		-	16	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-on Delay Time	$V_{DD} = -10V, I_D = -15A,$ $R_{GEN} = 2.7\Omega,$ $V_{GS} = -10V$	-	8	-	ns
t_r	Turn-on Rise Time		-	59	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	111	-	ns
t_f	Turn-off Fall Time		-	43	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I_s	Maximum Continuous Drain to Source Diode Forward Current	-	-	-15	-	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current	-	-	-60	-	A
V_{SD}	Drain to Source Diode Forward Voltage	$V_{GS} = 0V, I_s = -15A$	-	-	-1.2	V
trr	Reverse Recovery Time	$T_J = 25^\circ\text{C}, I_{SD} = -15A,$ $V_{GS} = 0V$ $di/dt = -100A/\mu\text{s}$	-	23	-	ns
Qrr	Reverse Recovery Charge		-	14	-	Nc

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

2. EAS condition: $T_J = 25^\circ\text{C}, V_{DD} = -15V, V_G = -10V, R_G = 25\Omega, L = 0.5\text{mH}, I_{AS} = -15A$ 3. Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 0.5\%$

Typical Performance Characteristics

Figure 1: Output Characteristics

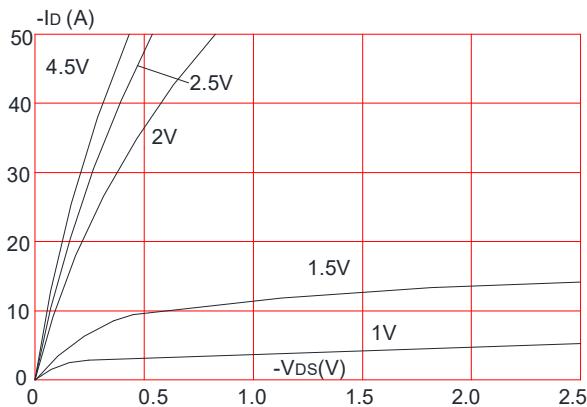


Figure 3: On-resistance vs. Drain Current

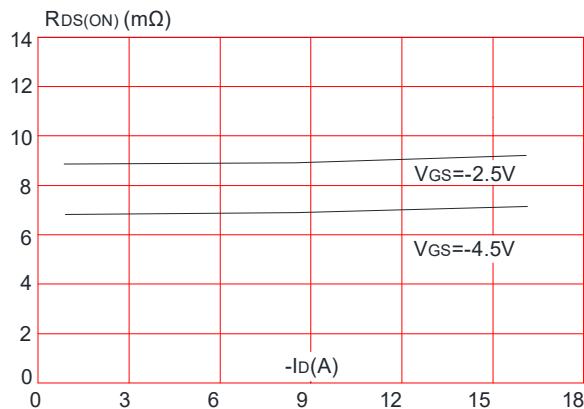


Figure 5: Gate Charge Characteristics

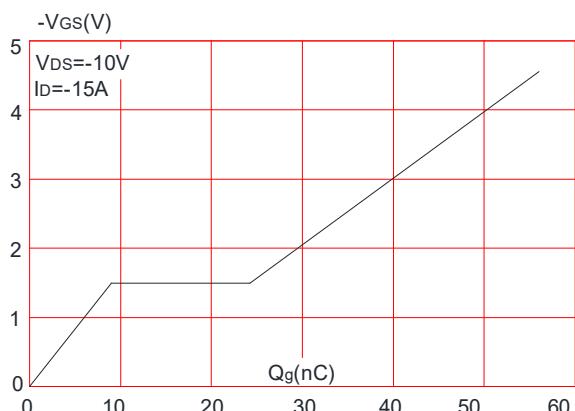


Figure 2: Typical Transfer Characteristics

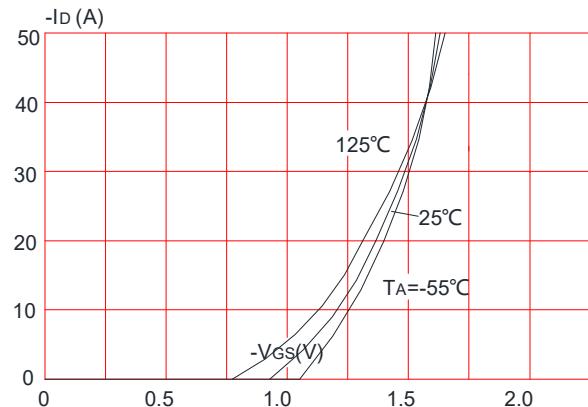


Figure 4: Body Diode Characteristics

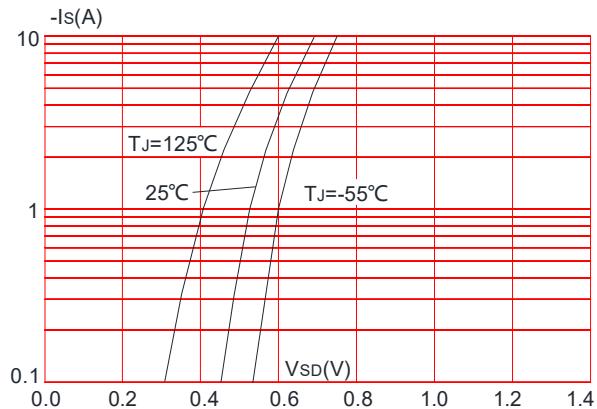


Figure 6: Capacitance Characteristics

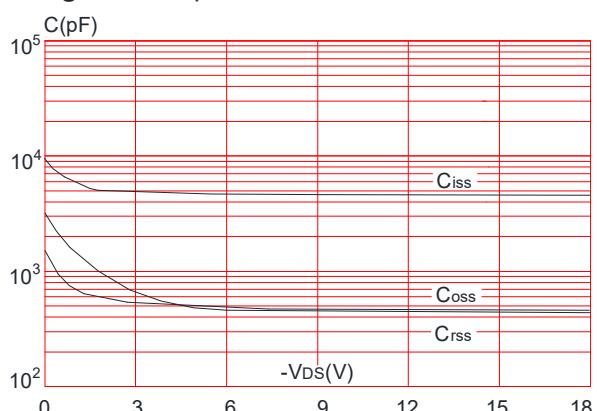


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

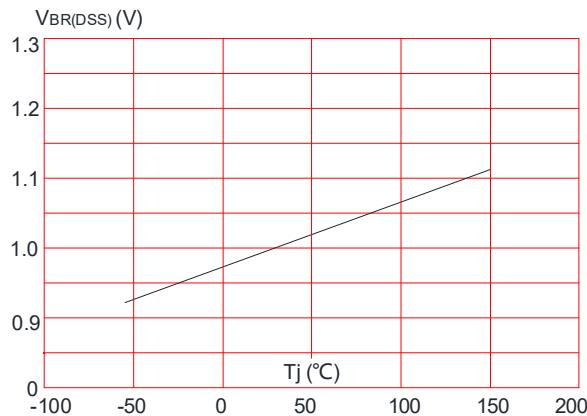


Figure 9: Maximum Safe Operating Area

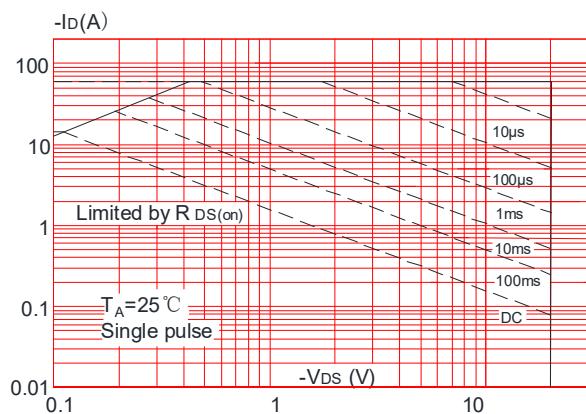


Figure 11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

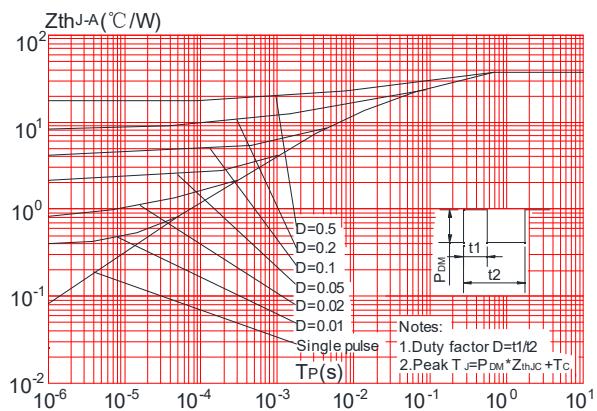


Figure 8: Normalized on Resistance vs. Junction Temperature

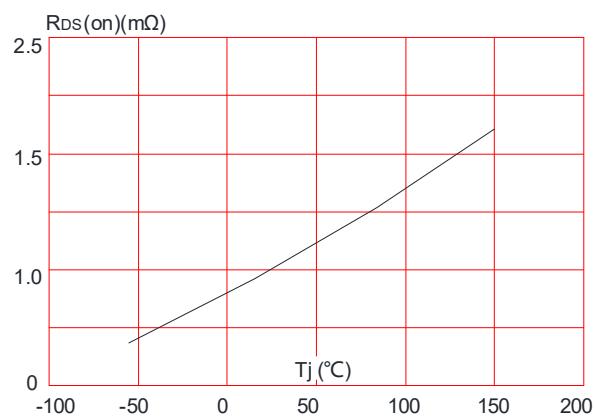
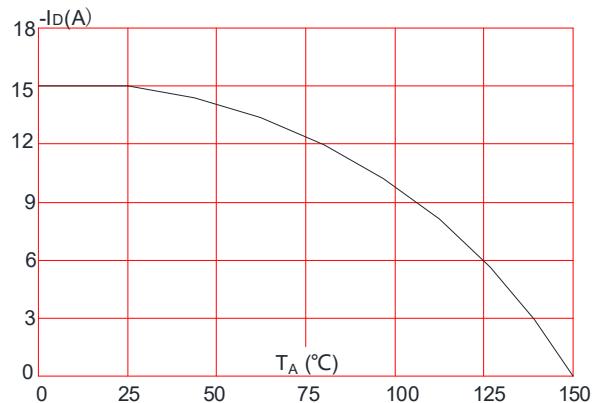
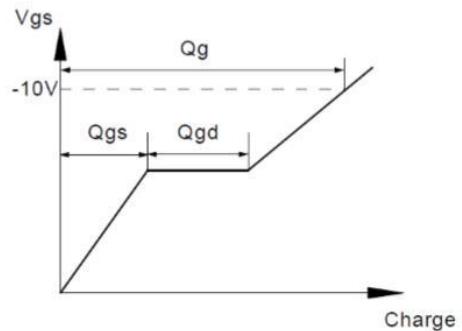
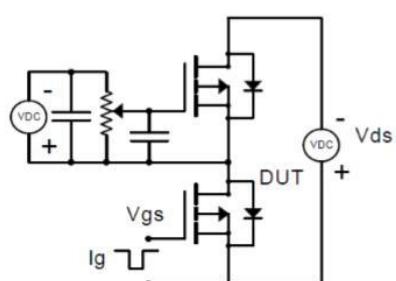


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

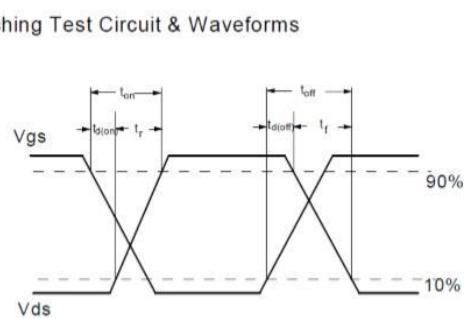
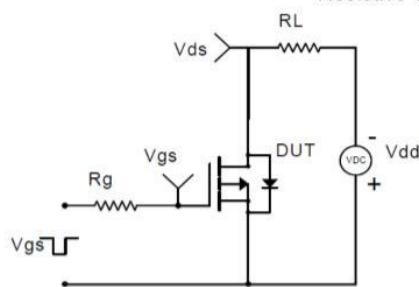


Test Circuit

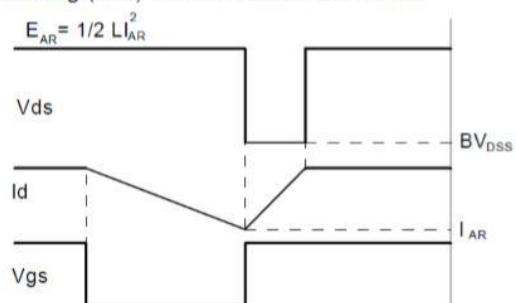
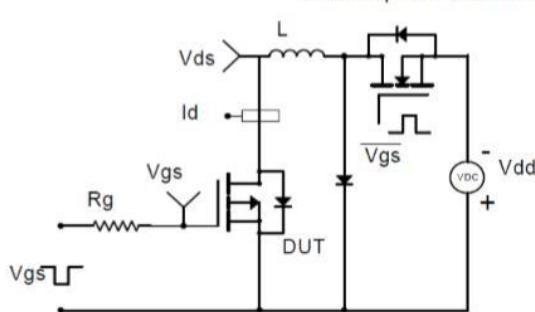
Gate Charge Test Circuit & Waveform



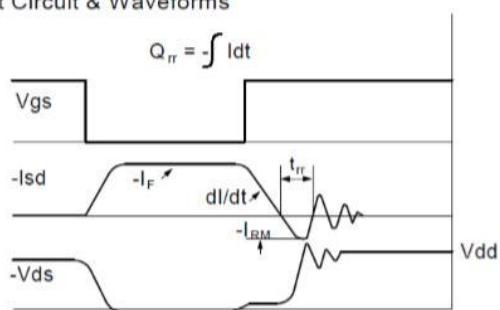
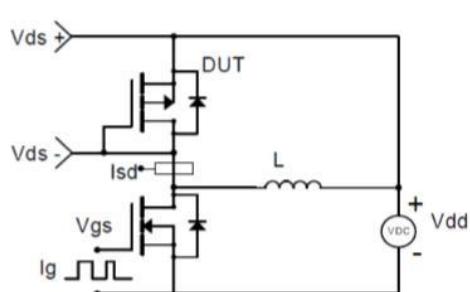
Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching (UIS) Test Circuit & Waveforms

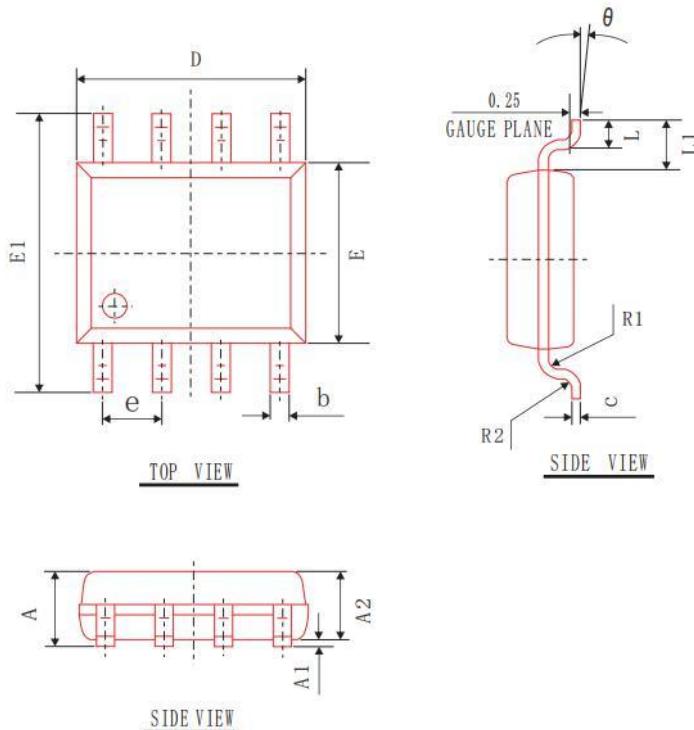


Diode Recovery Test Circuit & Waveforms





Package Mechanical Data-SOP-8

COMMON DIMENSIONS
(UNITS OF MEASURE=mm)

SYMBOL	MIN	NOM	MAX
A	1.40	1.60	1.80
A1	0.05	0.15	0.25
A2	1.35	1.45	1.55
b	0.30	0.40	0.50
c	0.153	0.203	0.253
D	4.80	4.90	5.00
E	3.80	3.90	4.00
E1	5.80	6.00	6.20
L	0.45	0.70	1.00
θ	2°	4°	6°
L1	1.04 REF		
e	1.27 BSC		
R1	0.07 TYP		
R2	0.07 TYP		

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