



Description

JMT P-channel Enhancement Mode Power MOSFET

Features

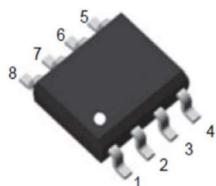
- $V_{DS} = -30V$, $I_D = -10A$
 $R_{DS(ON)} < 23m\Omega$ @ $V_{GS} = -10V$
 $R_{DS(ON)} < 34m\Omega$ @ $V_{GS} = -4.5V$
- Advanced Trench Technology
- Excellent $R_{DS(ON)}$ and Low Gate Charge
- Lead free product is acquired

Application

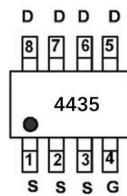
- PWM Applications
- Load Switch
- Power Management



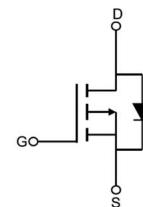
100% UIS TESTED!
100% ΔV_{ds} TESTED!



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)
4435	JMTP4435A	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		-30	V
V_{GSS}	Gate-Source Voltage		± 20	V
I_D	Continuous Drain Current	$T_C = 25^\circ C$	-10	A
		$T_C = 100^\circ C$	-7	A
I_{DM}	Pulsed Drain Current ^{note1}		-40	A
P_D	Power Dissipation	$T_A = 25^\circ C$	3.7	W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient		33.8	$^\circ C/W$
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 Characteristic						
$V_{(\text{BR})\text{DSS}}$	Drain-Source Breakdown Voltage	$V_{GS}=0\text{V}, I_D = -250\mu\text{A}$	-30	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = -30\text{V}, V_{GS} = 0\text{V}$,	-	-	-1	μA
I_{GSS}	Gate to Body Leakage Current	$V_{DS} = 0\text{V}, V_{GS} = \pm 20\text{V}$	-	-	± 100	nA
On Characteristics						
$V_{GS(\text{th})}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = -250\mu\text{A}$	-1.0	-1.5	-2.4	V
$R_{DS(\text{on})}$ note2	Static Drain-Source on-Resistance	$V_{GS} = -10\text{V}, I_D = -10\text{A}$	-	16	23	$\text{m}\Omega$
		$V_{GS} = -4.5\text{V}, I_D = -5\text{A}$	-	25	34	
Dynamic Characteristics						
C_{iss}	Input Capacitance	$V_{DS} = -15\text{V}, V_{GS} = 0\text{V}, f = 1.0\text{MHz}$	-	1550	-	pF
C_{oss}	Output Capacitance		-	327	-	pF
C_{rss}	Reverse Transfer Capacitance		-	278	-	pF
Q_g	Total Gate Charge	$V_{DS} = -15\text{V}, I_D = -9.1\text{A}, V_{GS} = -10\text{V}$	-	30	-	nC
Q_{gs}	Gate-Source Charge		-	5.3	-	nC
Q_{gd}	Gate-Drain("Miller") Charge		-	7.6	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-on Delay Time	$V_{DD} = -15\text{V}, I_D = -6\text{A}, V_{GS} = -10\text{V}, R_{GEN} = 2.5\Omega$	-	14	-	ns
t_r	Turn-on Rise Time		-	20	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	95	-	ns
t_f	Turn-off Fall Time		-	65	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I_s	Maximum Continuous Drain to Source Diode Forward Current	-	-	-10	A	
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current	-	-	-40	A	
V_{SD}	Drain to Source Diode Forward Voltage	$V_{GS} = 0\text{V}, I_s = -10\text{A}$	-	-0.8	-1.2	V

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

2. Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$

Typical Performance Characteristics

Figure 1: Output Characteristics

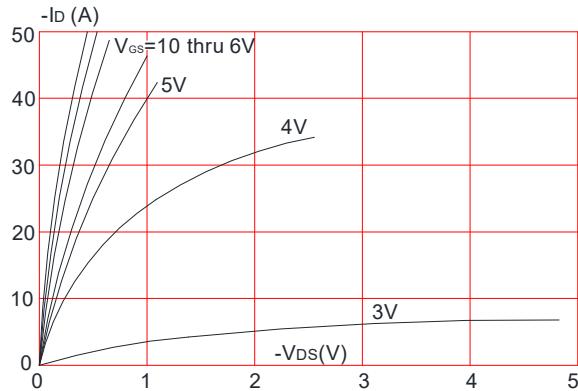


Figure 3: On-resistance vs. Drain Current

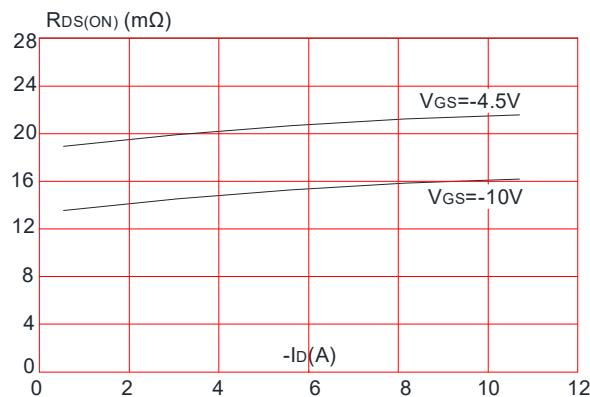


Figure 5: Gate Charge Characteristics

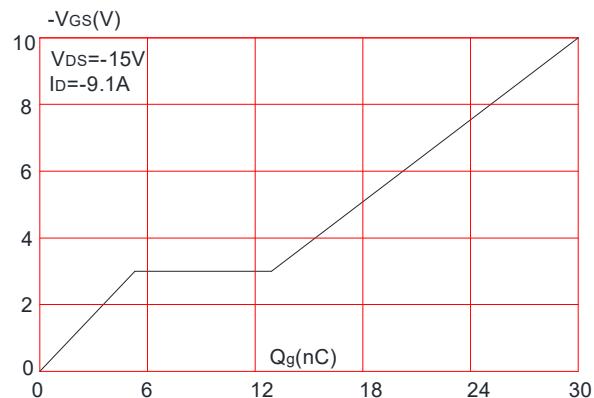


Figure 2: Typical Transfer Characteristics

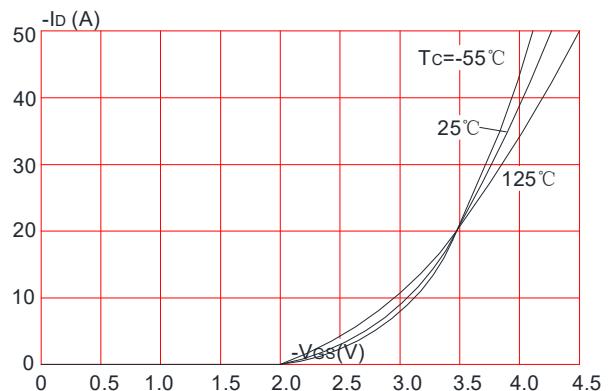


Figure 4: Body Diode Characteristics

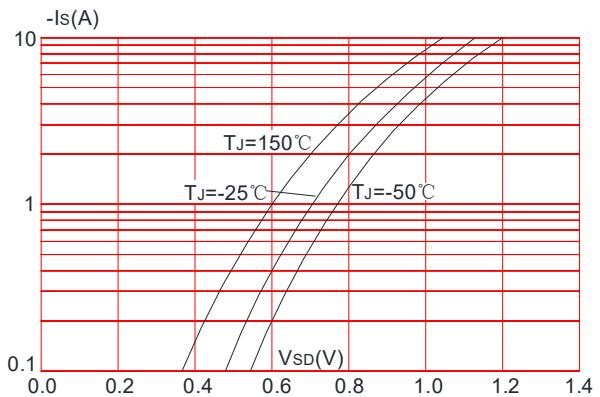


Figure 6: Capacitance Characteristics

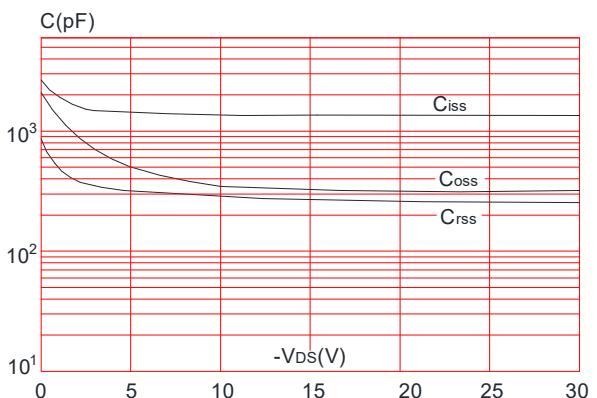


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

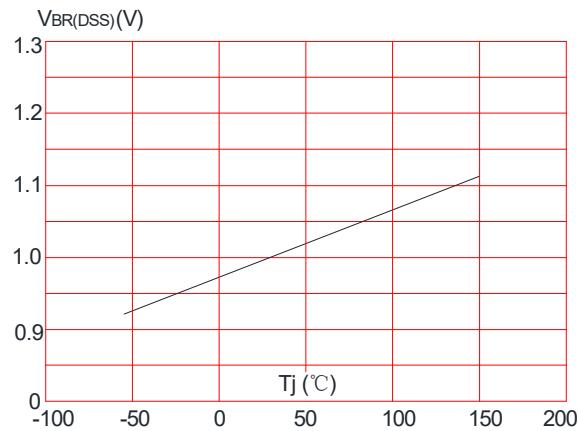


Figure 8: Normalized on Resistance vs. Junction Temperature

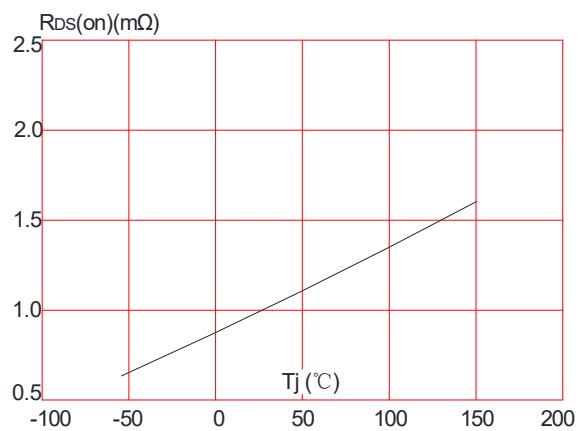


Figure 9: Maximum Safe Operating Area

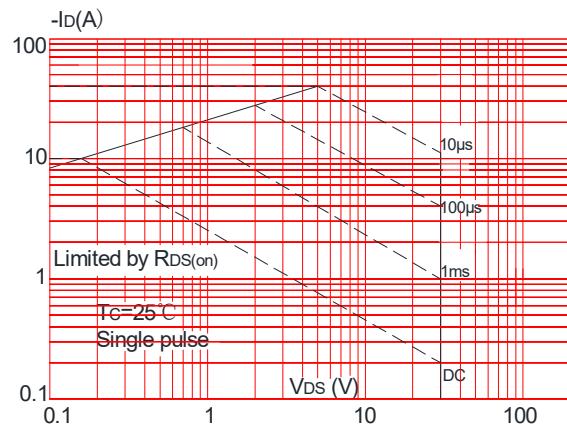


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

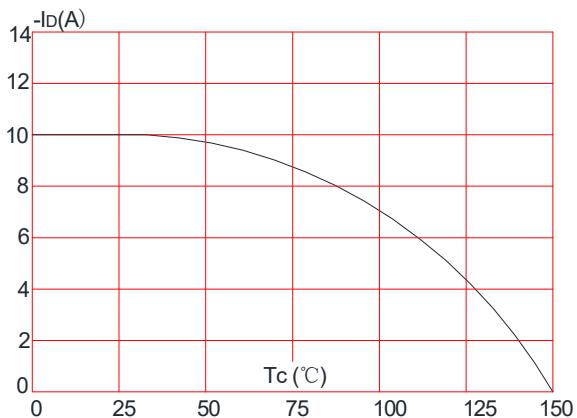
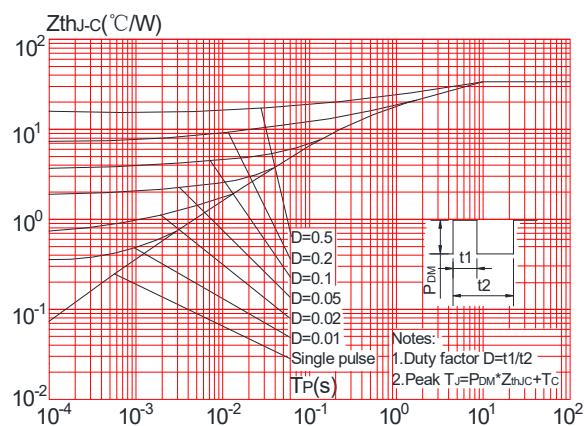
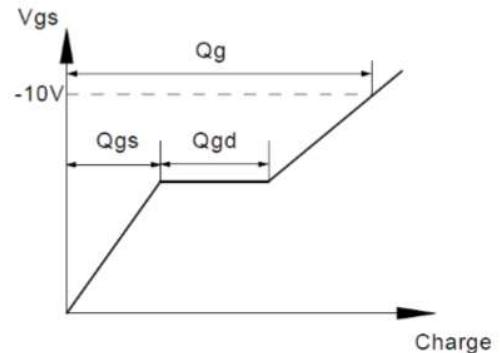
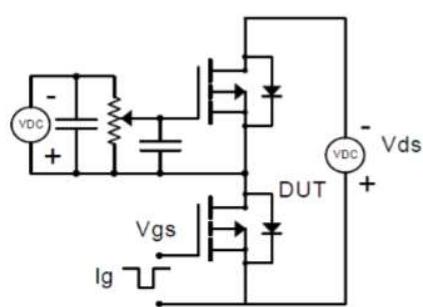


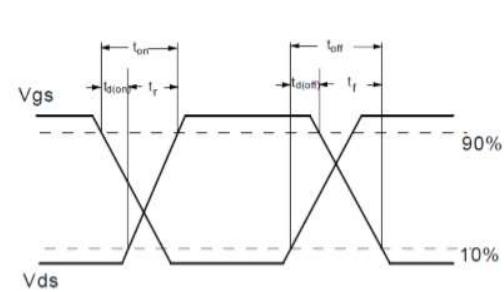
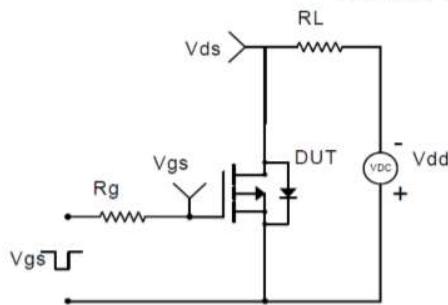
Figure 11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient



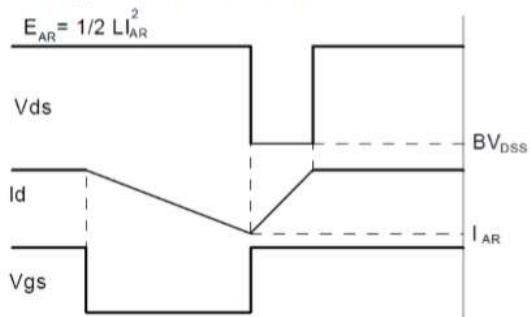
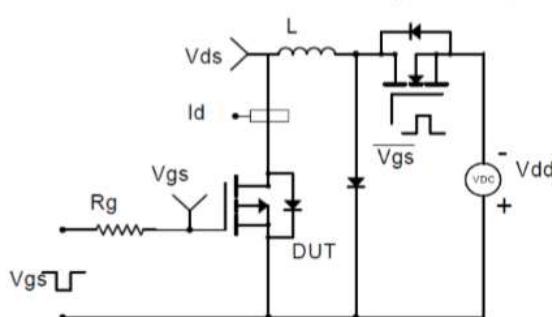
Gate Charge Test Circuit & Waveform



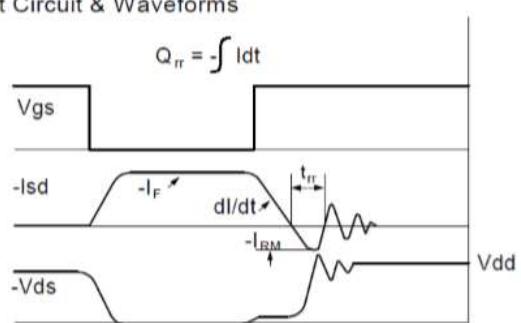
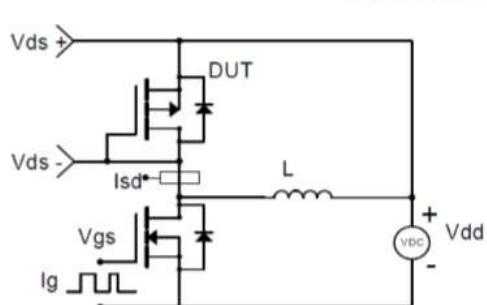
Resistive Switching Test Circuit & Waveforms



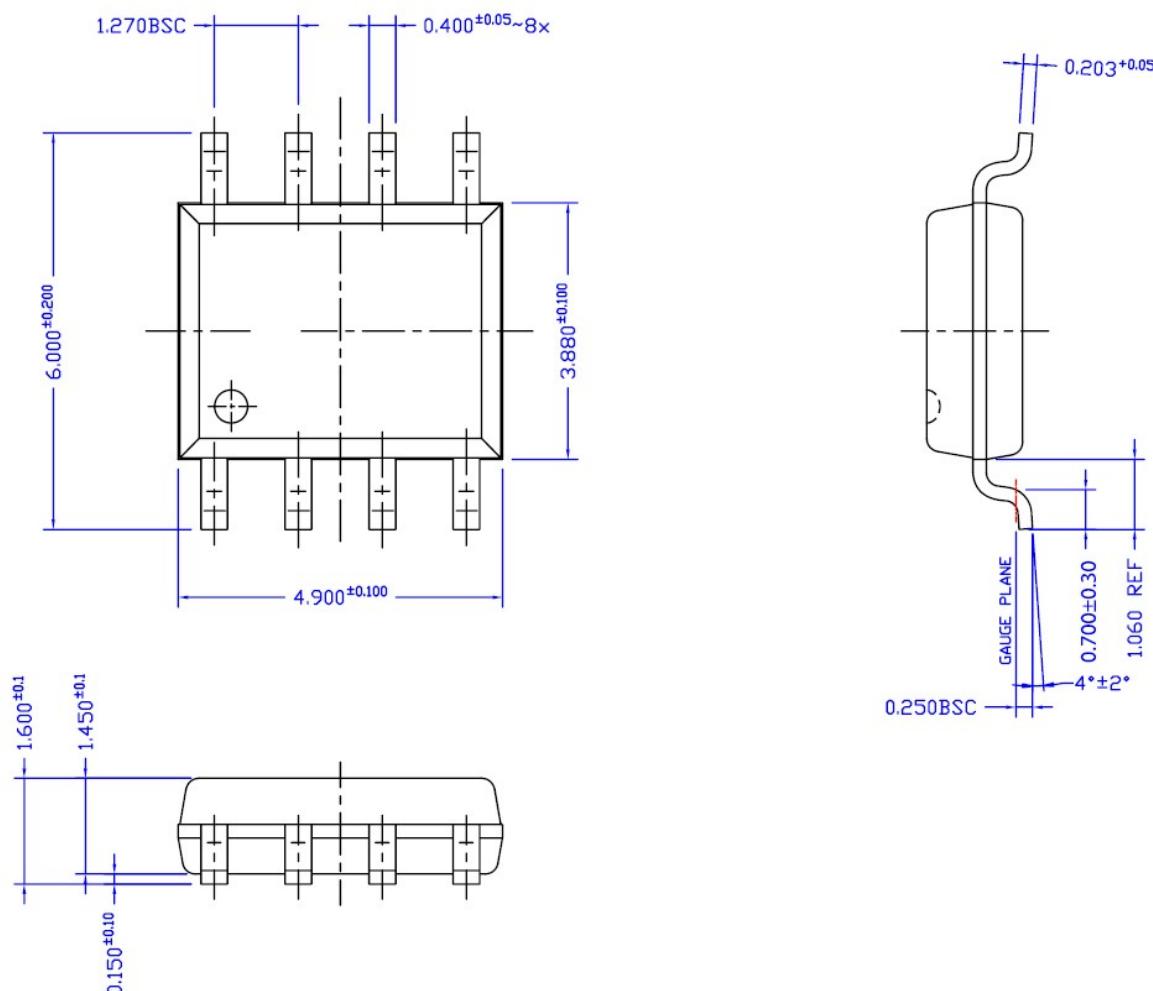
Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



Package Mechanical Data



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