

Description

JMT P-channel Enhancement Mode Power MOSFET

Features

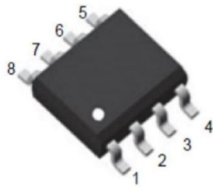
- $V_{DS} = -30V$, $I_D = -10A$
 $R_{DS(ON)} < 23m\Omega @ V_{GS} = -10V$
 $R_{DS(ON)} < 34m\Omega @ V_{GS} = -4.5V$
- Advanced Trench Technology
- Excellent $R_{DS(ON)}$ and Low Gate Charge
- Lead Free

Application

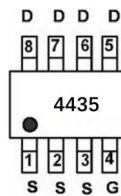
- PWM Applications
- Load Switch
- Power Management



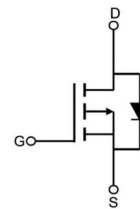
100% UIS TESTED!



SOP-8 top view



Marking and pin Assignment



Schematic Diagram

Package Marking and Ordering Information

Device Marking	Device	Outline	Package	Reel Size	Reel (pcs)	Per Carton (pcs)
4435	JMTP4435A	TAPING	SOP-8	13"	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
		$T_C = 100^\circ C$	-6.5
I_{DM}	Pulsed Drain Current ^{note1}	-40	A
E_{AS}	Single Pulsed Avalanche Energy ^{note2}	56	mJ
P_D	Power Dissipation	$T_A = 25^\circ C$	1.62
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	77	$^\circ C/W$
T_J, T_{STG}	Operating and Storage Temperature Range	-55 to +150	$^\circ C$



Electrical Characteristics (T_J=25°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 = -250μA	-30	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = -30V, V _{GS} = 0V,	-	-	-1	μA
I _{GSS}	Gate to 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	-1.0	-1.5	-2.5	V
R _{DS(on)}	Static Drain-Source on-Resistance <small>note3</small>	V _{GS} = -10V, I _D = -10A	-	16	23	mΩ
		V _{GS} = -4.5V, I _D = -5A	-	25	34	
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} = -15V, V _{GS} = 0V, f = 1.0MHz	-	1432	-	pF
C _{oss}	Output Capacitance		-	186	-	pF
C _{rss}	Reverse Transfer Capacitance		-	147	-	pF
Q _g	Total Gate Charge	V _{DD} = -15V, I _D = -9.1A, V _{GS} = -10V	-	28	-	nC
Q _{gs}	Gate-Source Charge		-	5	-	nC
Q _{gd}	Gate-Drain("Miller") Charge		-	6	-	nC
Switching Characteristics						
t _{d(on)}	Turn-on Delay Time	V _{DD} = -15V, I _D = -6A, V _{GS} =-10V, R _{GEN} =2.5Ω	-	9	-	ns
t _r	Turn-on Rise Time		-	36	-	ns
t _{d(off)}	Turn-off Delay Time		-	34	-	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		-	-	-10	A
I _{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	-40	A
V _{SD}	Drain to Source Diode Forward Voltage	V _{GS} = 0V, I _S = -10A	-	-	-1.2	V
t _{rr}	Reverse Recovery Time	I _F = -10A,	-	14	-	ns
Q _{rr}	Reverse Recovery Charge	di/dt=100A/μs	-	6	-	nC

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

2. EAS condition: Starting T_J=25°C, V_{DD}=-15V, V_G=10V, R_G=25Ω, L=0.5mH, I_{AS}=-15A

3. Pulse Test: Pulse Width≤300μs, Duty Cycle≤2%



Typical Performance Characteristics

Figure 1: Output Characteristics

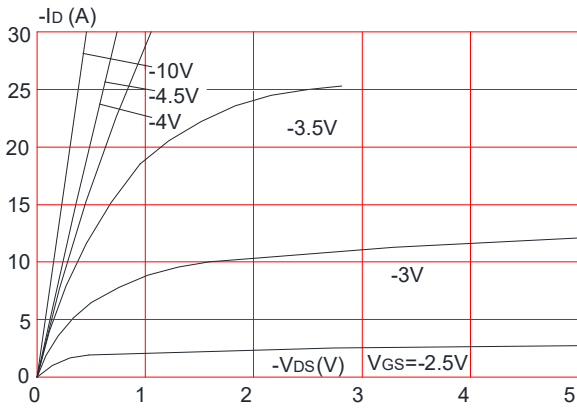


Figure 2: Typical Transfer Characteristics

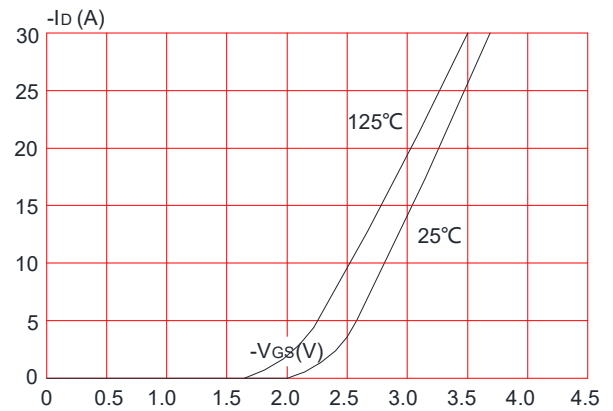


Figure 3: On-resistance vs. Drain Current

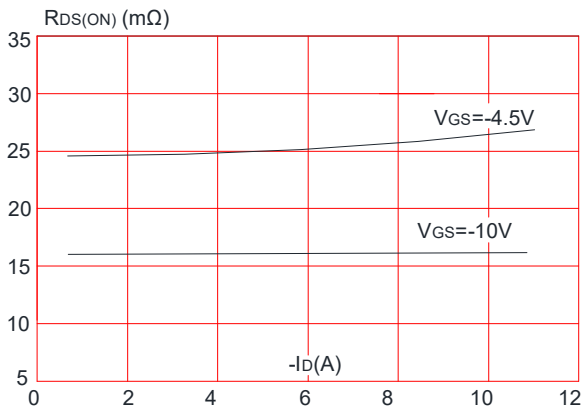


Figure 4: Body Diode Characteristics

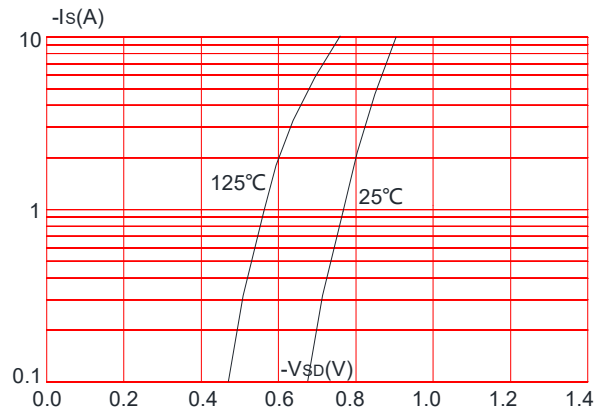


Figure 5: Gate Charge Characteristics

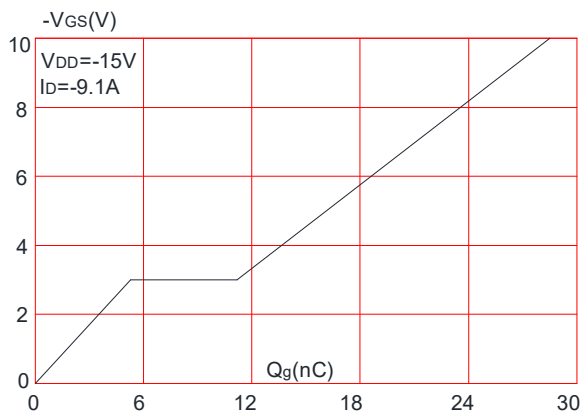


Figure 6: Capacitance Characteristics

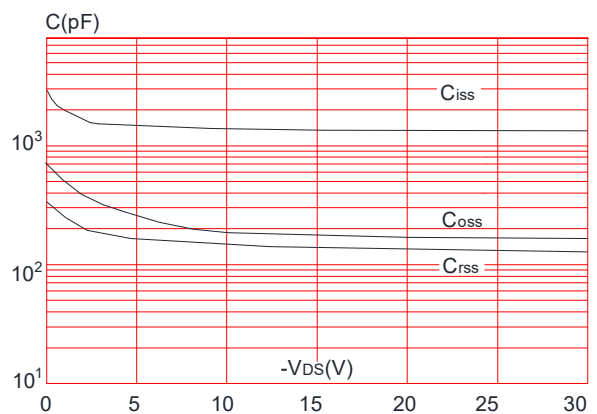




Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

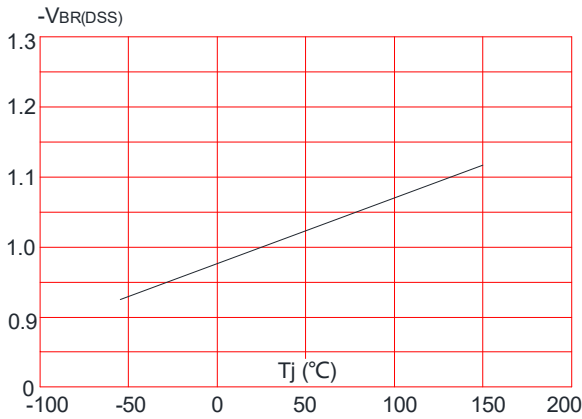


Figure 8: Normalized on Resistance vs. Junction Temperature

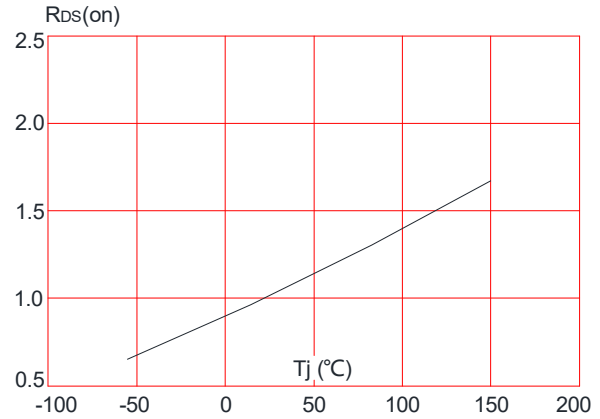


Figure 9: Maximum Safe Operating Area

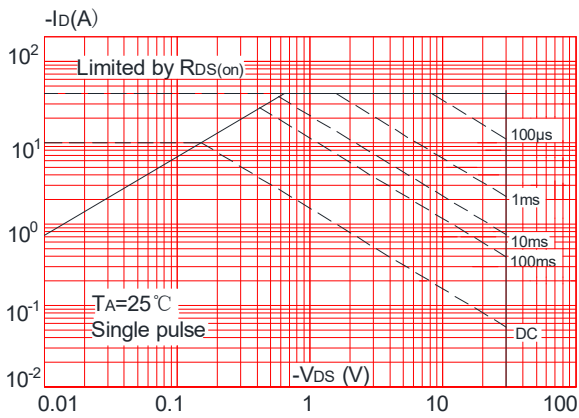


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

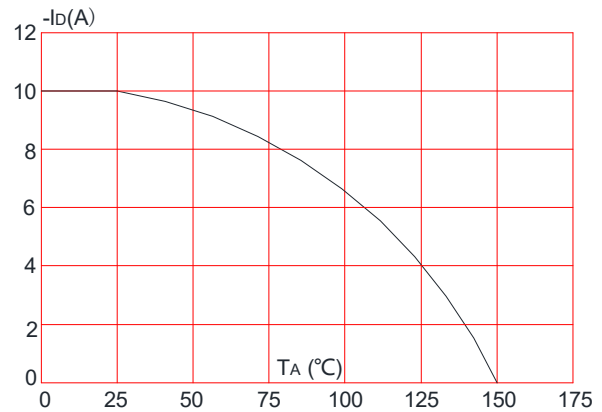
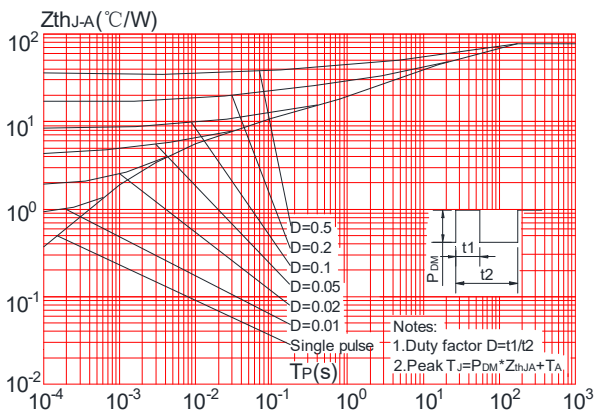
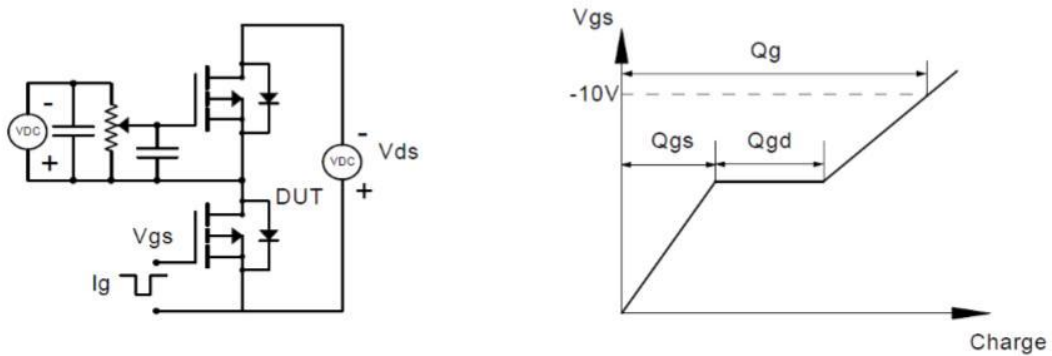


Figure 11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

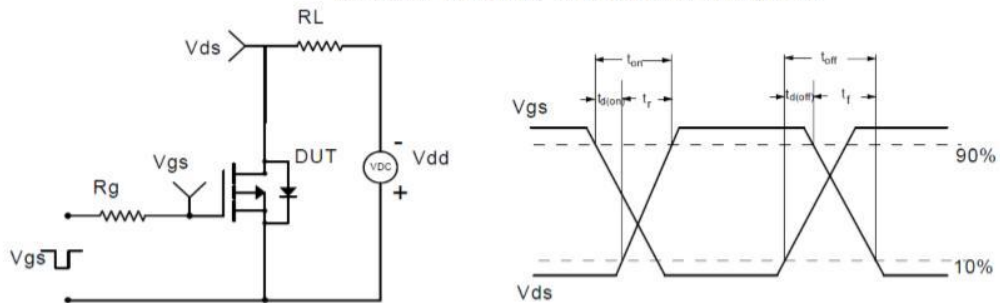


Test Circuit

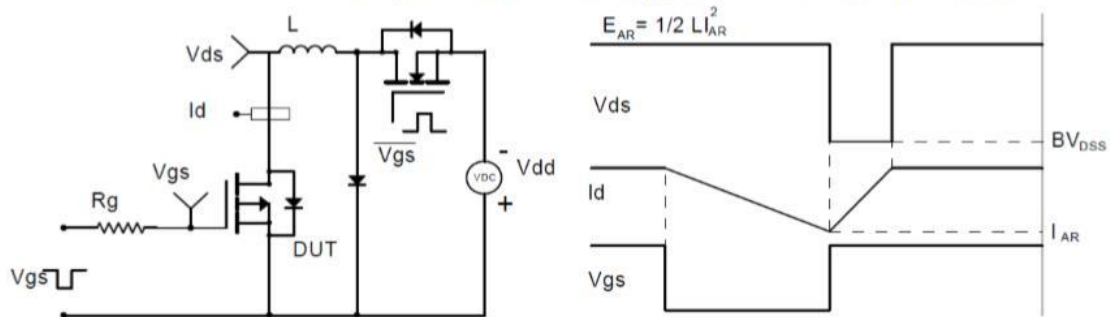
Gate Charge Test Circuit & Waveform



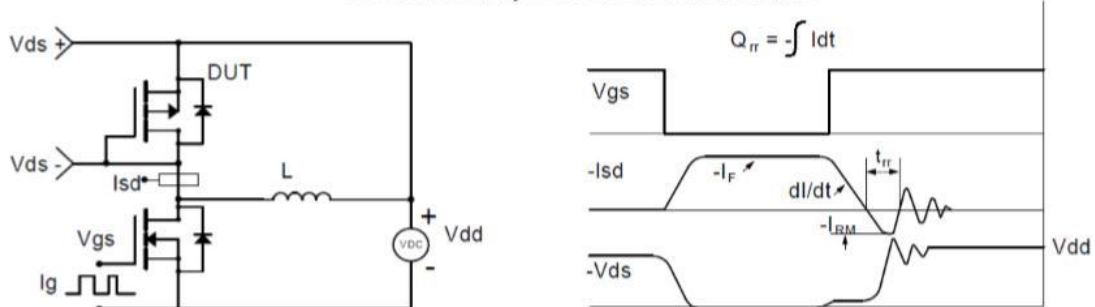
Resistive Switching Test Circuit & Waveforms



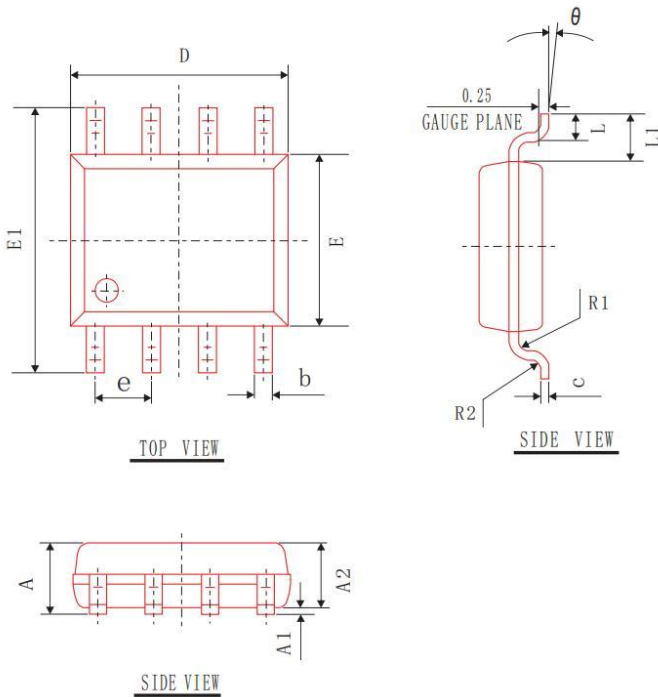
Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



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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