Features

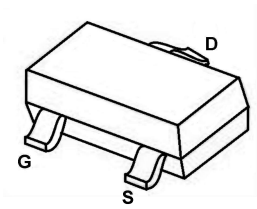
- VDS = 20V ID= 7.0A
- Low gate charge
- Built-in G-S protection diode against ESD
- ESD Rating：2000V HBM
- Lead Free Available (RoHS Compliant)

Product Summary

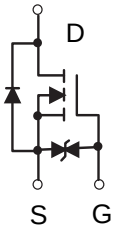
V_{DS}	20	V
$R_{DS(on),MAX}$@ V_{GS}=4.5 V	18	mΩ
I_D	7.0	A

Applications

- Load Switch
- PWM Application



SOT-23



N Channel MOSFET

Ordering Information

Ordering Device No.	Package	Packing	Quantity
JME3416EZA	SOT-23	Tape&Reel	3000/Reel

Absolute Maximum Ratings (T_A=25°C Unless Otherwise Noted)

Symbol	Parameter		Rating	Unit
V_{DS}	Drain-Source Voltage		20	V
V_{GSS}	Gate-Source Voltage		±12	
I_D*	Continuous Drain Current	V_{GS}=4.5V	7.0	A
I_{DM}*	300μs Pulsed Drain Current		28	
I_S*	Diode Continuous Forward Current		7.0	A
T_J	Maximum Junction Temperature		150	°C
T_{STG}	Storage Temperature Range		-55 to 150	
P_D*	Maximum Power Dissipation	T_A=25°C	1.4	W
		T_A=100°C	1.1	
$R_{\theta JA}$*	Thermal Resistance-Junction to Ambient		89	°C/W

Notes：

*Surface Mounted on 1in^2 pad area, t ≤ 10sec.

Electrical Characteristics (T_A=25°C Unless Otherwise Noted)

Symbol	Parameter	Test Condition	LIMITS			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_{DS}=250μA	20			V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=20V, V_{GS}=0V			1	μA
		T_J=85°C			10	
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_{DS}=250μA	0.5	0.7	0.9	V
I_{GSS}	Gate Leakage Current	V_{GS}=±12V, V_{DS}=0V			±9	μA
$R_{DS(ON)}$ [a]	Drain-Source On-state Resistance	V_{GS}=4.5V,I_{DS}=4A		13	18	mΩ
		V_{GS}=2.5V,I_{DS}=3A		17	22	
Diode Characteristics						
t_{rr}	Reverse Recovery Time	I_{DS}=7.0A, dI_{SD}/dt=100A/μs		15		ns
Q_{rr}	Reverse Recovery Charge			8		nC

Electrical Characteristics (Cont.)(T_A=25°C Unless Otherwise Noted)

Symbol	Parameter	Test Condition	LIMITS			Unit
			Min.	Typ.	Max.	
Dynamic Characteristics [b]						
R_G	Gate Resistance	V_{GS}=0V,V_{DS}=0V,F=1MHz		3.5		Ω
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=10V, Frequency=1.0MHz		655		pF
C_{oss}	Output Capacitance			150		
C_{rss}	Reverse Transfer Capacitance			85		
$t_{d(ON)}$	Turn-on Delay Time	V_{DD}=10V, R_L=12.5Ω, I_{DS}=6.5A, V_{GEN}=5V, R_G=25Ω		1.9		ns
T_r	Turn-on Rise Time			1.3		
$t_{d(OFF)}$	Turn-off Delay Time			13		
T_f	Turn-off Fall Time			5		
Gate Charge Characteristics [b]						
Q_g	Total Gate Charge	I_{DS}=6.5A, dI_{SD}/dt=100A/μs		7.9		nC
Q_{gs}	Gate-Source Charge			2.4		
Q_{gd}	Gate-Drain Charge			2.9		

Notes：

a : Pulse test ; pulse width≤300μs, duty cycle≤2%.

b : Guaranteed by design, not subject to production testing.

Typical Electrical and Thermal Characteristics

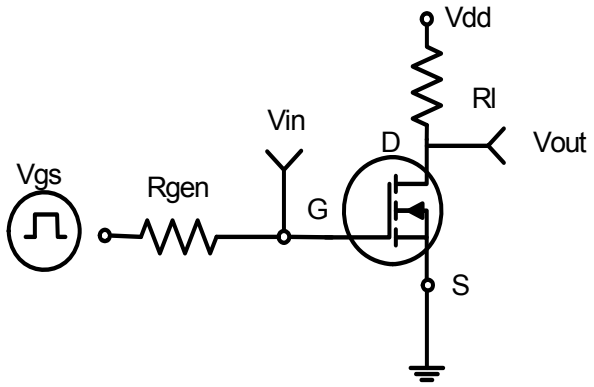


Figure 1:Switching Test Circuit

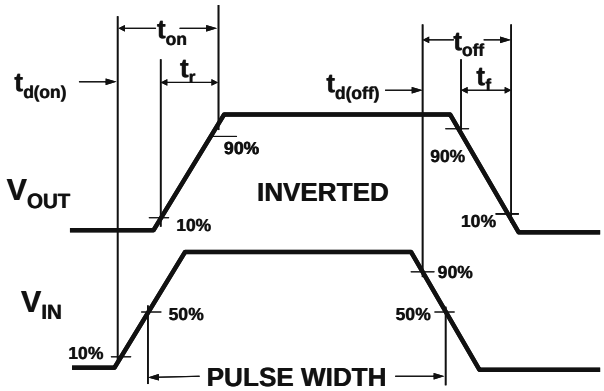


Figure 2:Switching Waveforms

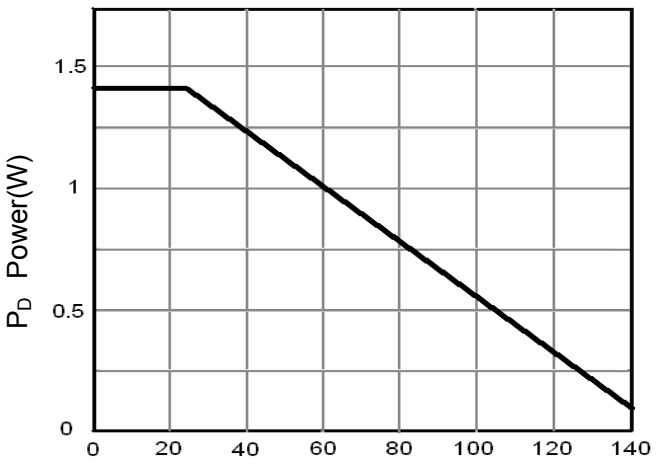


Figure 3 Power Dissipation

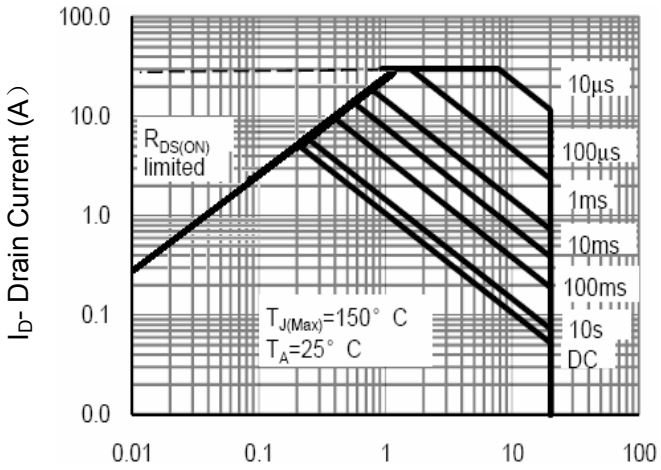


Figure 4 Safe Operation Area

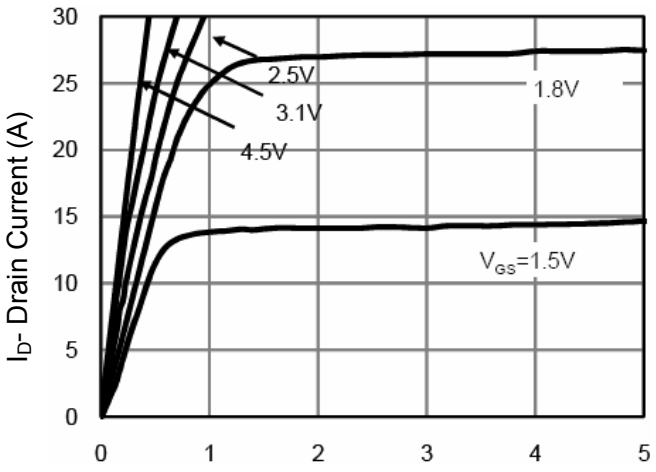


Figure 5 Output Characteristics

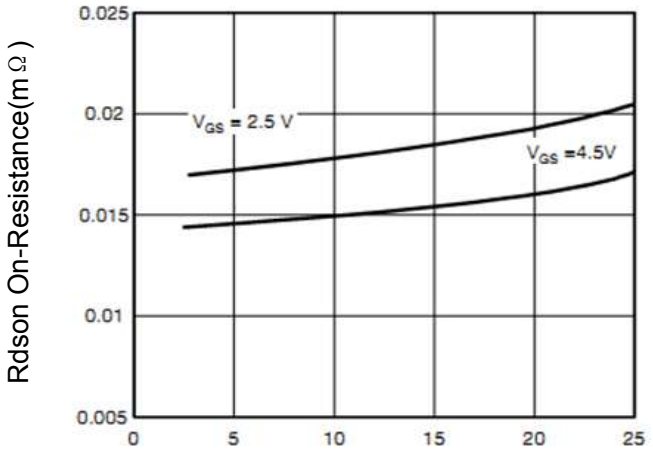


Figure 6 Drain-Source On-Resistance

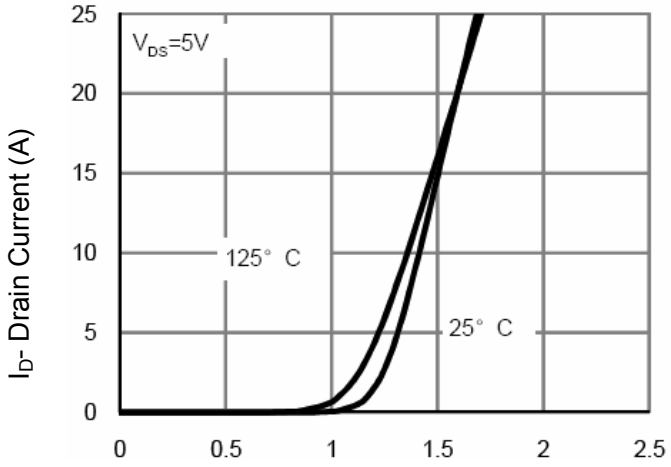


Figure 7 Transfer Characteristics

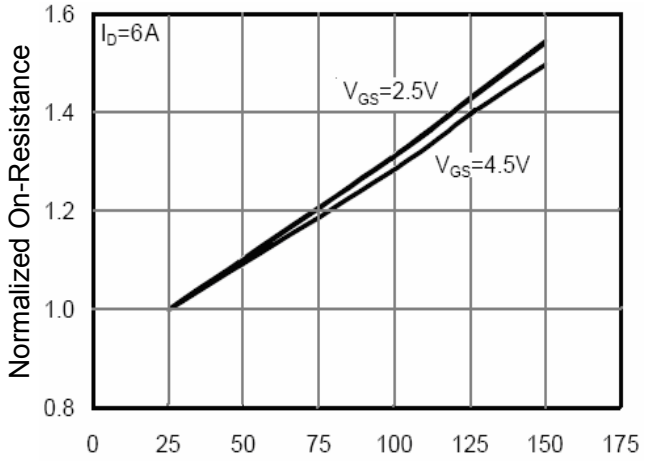


Figure 8 Drain-Source On-Resistance

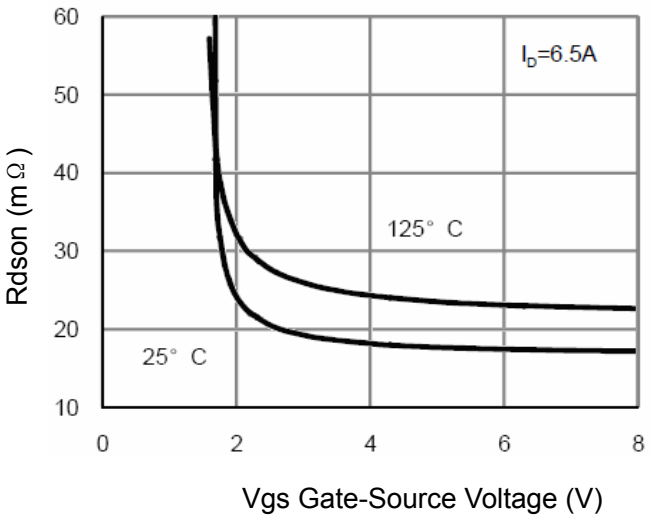


Figure 9 Rdson vs Vgs

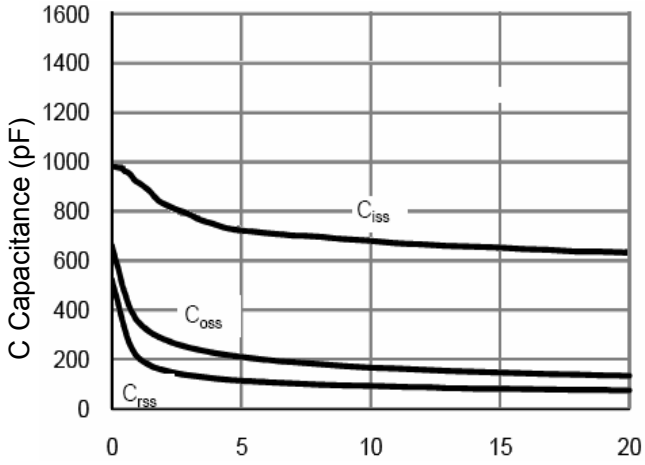


Figure 10 Capacitance vs Vds

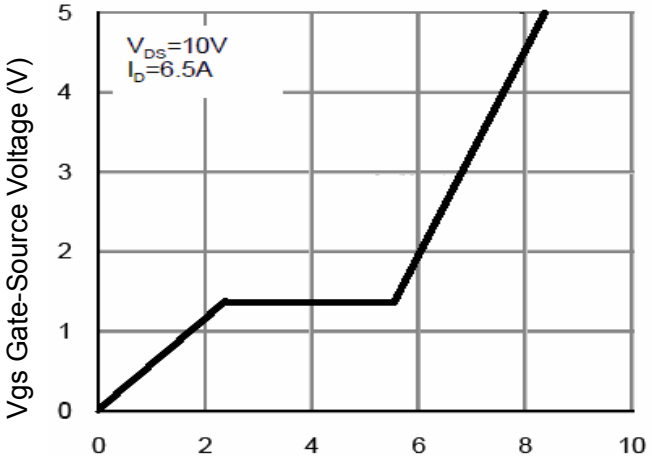


Figure 11 Gate Charge

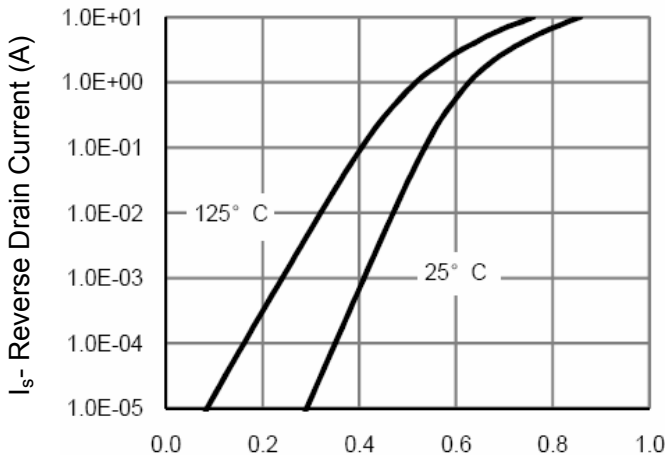
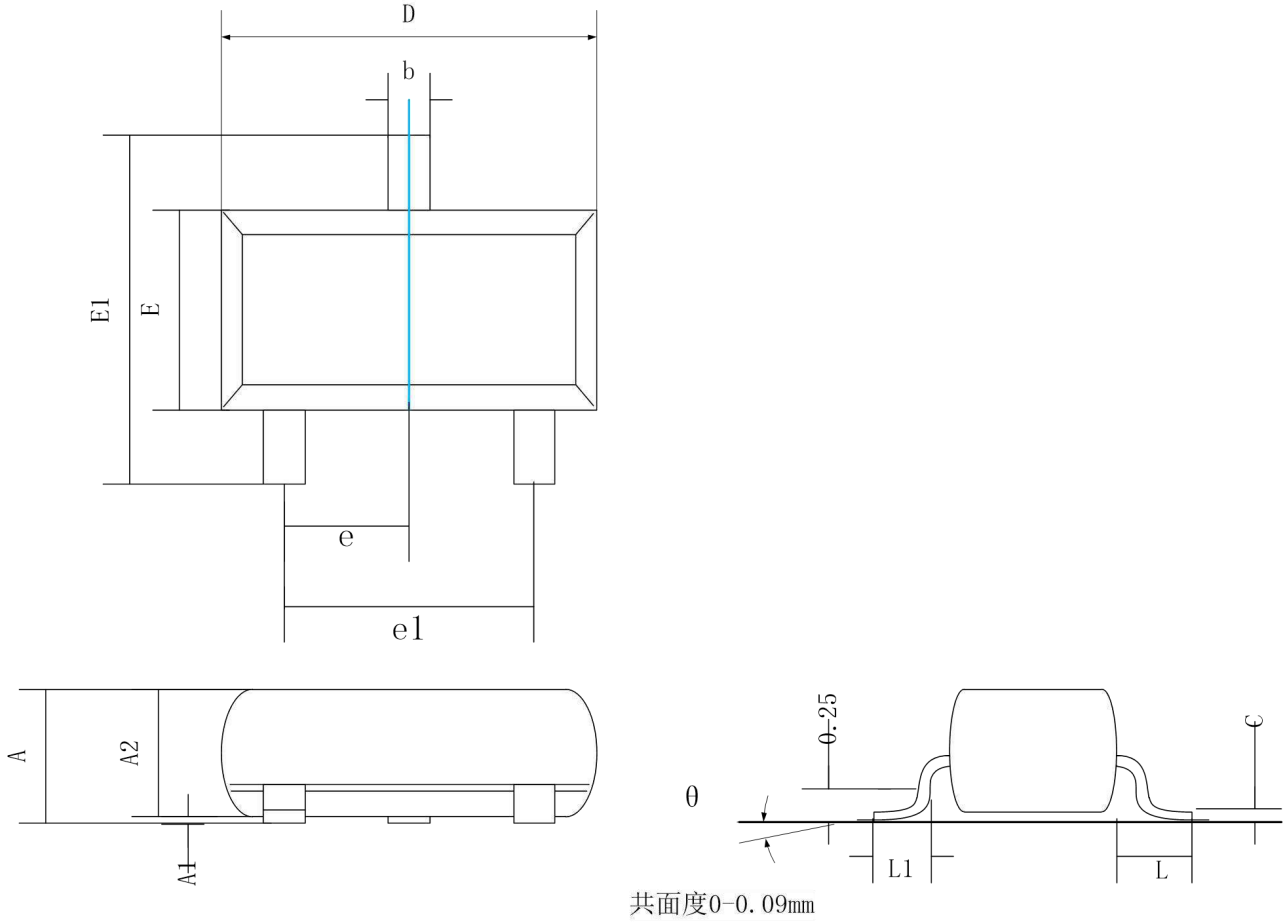


Figure 12 Source- Drain Diode Forward

SOT-23 Package Information



Symbol	Dimensions In Millimeters	
	Min.	Max.
A	0.90	1.15
A1	0.00	0.10
A2	0.90	1.05
b	0.30	0.50
c	0.08	0.15
D	2.80	3.00
E	1.20	1.40
E1	2.25	2.55
e	0.95 REF.	
e1	1.80	2.00
L	0.55 REF.	
L1	0.30	0.50
θ	0°	8°

Disclaimer

The content specified herein is for the purpose of introducing JMW's products (hereinafter "Products"). The information given in this document shall in no event be regarded as a guarantee of conditions or characteristics. Examples of application circuits, circuit constants and any other information contained herein illustrate the standard usage and operations of the Products. The peripheral conditions must be taken into account when designing circuits for mass production.

JMW does not assume any liability for infringement of patents, copyrights, or other intellectual property rights of third parties by or arising from the use of the Products or technical information described in this document.

The Products are not designed or manufactured to be used with any equipment, device or system which requires an extremely high level of reliability the failure or malfunction of which may result in a direct threat to human life or create a risk of human injury (such as a medical instrument, transportation equipment, aerospace machinery, nuclear-reactor controller, fuel-controller or other safety device). JMW shall bear no responsibility in any way for use of any of the Products for the above special purposes.

Although JMW endeavors to improve the quality and reliability of its products, semiconductor products have specific characteristics such as the occurrence of failure at a certain rate and malfunctions under certain use conditions. Please be sure to implement safety measures to guard them against the possibility of physical injury, and injury or damage caused by fire in the event of the failure of a JMW product.

The content specified herein is subject to change for improvement without notice. When using a JMW product, be sure to obtain the latest specifications.