



Description

JMT N-channel Enhancement Mode Power MOSFET

Features

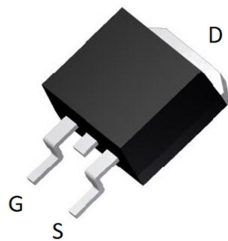
- 40V, 190A
 $R_{DS(ON)} < 2.6m\Omega @ V_{GS} = 10V$
- Advanced Trench Technology
- Provide Excellent $R_{DS(ON)}$ and Low Gate Charge
- Lead Free

Application

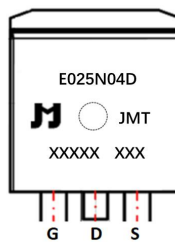
- Load Switch
- PWM Application
- Power Management



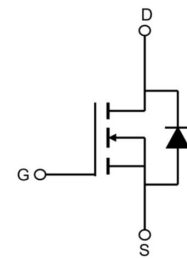
100% UIS TESTED!
100% ΔV_{ds} TESTED!



TO-263-3L 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)
JMTE025N04D	JMTE025N04D	TAPING	TO-263-3L	13"	800	4000

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

Symbol	Parameter	Max.	Units
V _{DSS}	Drain-Source Voltage	40	V
V _{GSS}	Gate-Source Voltage	±25	V
I _D	Continuous Drain Current	T _C = 25°C	190
		T _C = 100°C	124
I _{DM}	Pulsed Drain Current ^{note1}	760	A
EAS	Single Pulsed Avalanche Energy ^{note2}	576	mJ
P _D	Power Dissipation	T _C = 25°C	197
R _{θJC}	Thermal Resistance, Junction to Case	0.76	°C/W
T _J , T _{STG}	Operating and Storage Temperature Range	-55 to +175	°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	40	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =40V, V _{GS} =0V,	-	-	1.0	μA
I _{GSS}	Gate to Body Leakage Current	V _{DS} =0V, V _{GS} = ±25V	-	-	±100	nA
On Characteristics						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	2	3	4	V
R _{DS(on)}	Static Drain-Source on-Resistance <small>note3</small>	V _{GS} =10V, I _D =30A	-	1.9	2.6	mΩ
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =20V, V _{GS} =0V, f=1.0MHz	-	9060	-	pF
C _{oss}	Output Capacitance		-	1000	-	pF
C _{rss}	Reverse Transfer Capacitance		-	666	-	pF
Q _g	Total Gate Charge	V _{DD} =20V, I _D =30A, V _{GS} =10V	-	145	-	nC
Q _{gs}	Gate-Source Charge		-	30	-	nC
Q _{gd}	Gate-Drain("Miller") Charge		-	37	-	nC
Switching Characteristics						
t _{d(on)}	Turn-on Delay Time	V _{DD} =20V, I _D =30A, R _L =1Ω, R _{GEN} =3Ω, V _{GS} =10V	-	39	-	ns
t _r	Turn-on Rise Time		-	56	-	ns
t _{d(off)}	Turn-off Delay Time		-	108	-	ns
t _f	Turn-off Fall Time		-	71	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I _S	Maximum Continuous Drain to Source Diode Forward Current		-	-	190	A
I _{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	760	A
V _{SD}	Drain to Source Diode Forward Voltage	V _{GS} =0V, I _S =30A	-	-	1.2	V
t _{rr}	Body Diode Reverse Recovery Time	T _J =25°C, I _F =20A, di/dt=100A/μs	-	50	-	ns
Q _{rr}	Body Diode Reverse Recovery Charge		-	81	-	nC

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

2. EAS condition :Starting T_J=25°C, V_{DD}=50V, V_G=10V, L=0.5mH, R_g=25Ω, I_{AS}=48A

3. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%



Typical Performance Characteristics

Figure 1: Output Characteristics

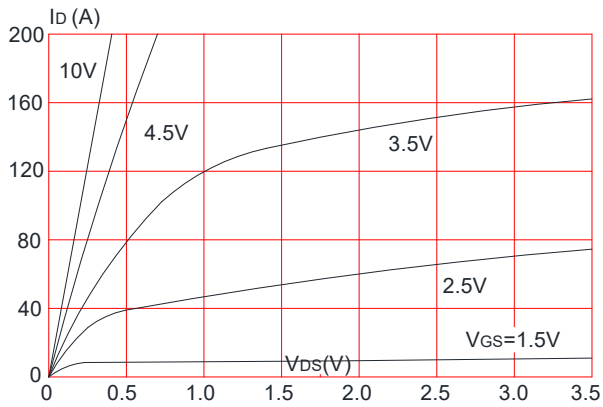


Figure 2: Typical Transfer Characteristics

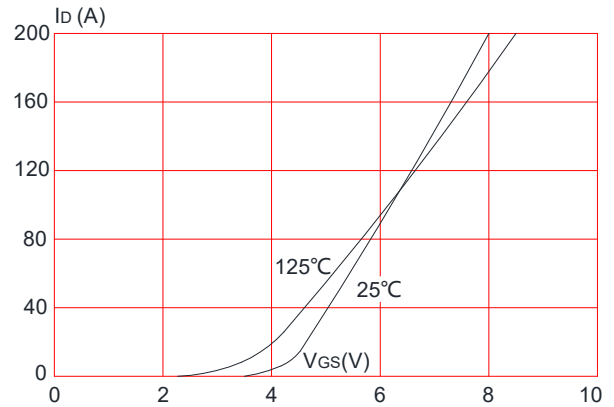


Figure 3: On-resistance vs. Drain Current

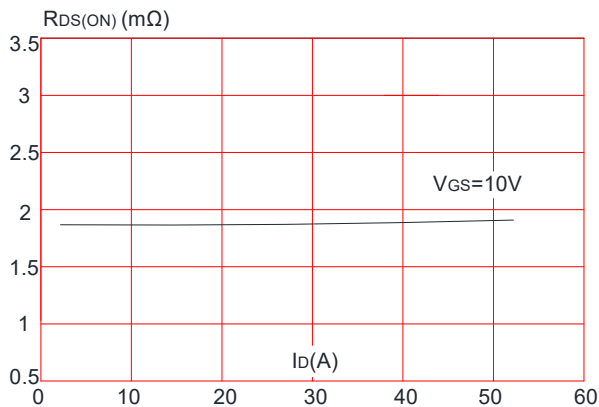


Figure 4: Body Diode Characteristics

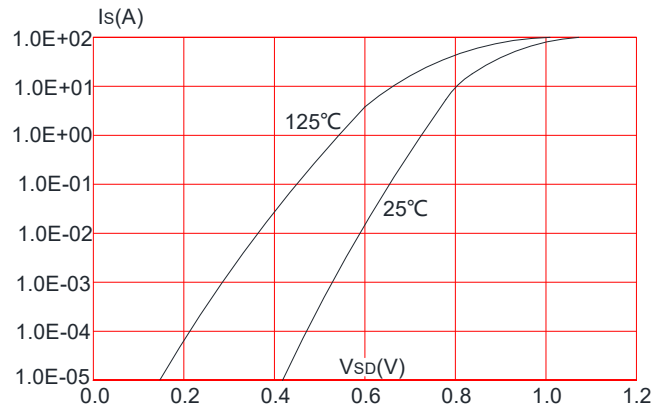


Figure 5: Gate Charge Characteristics

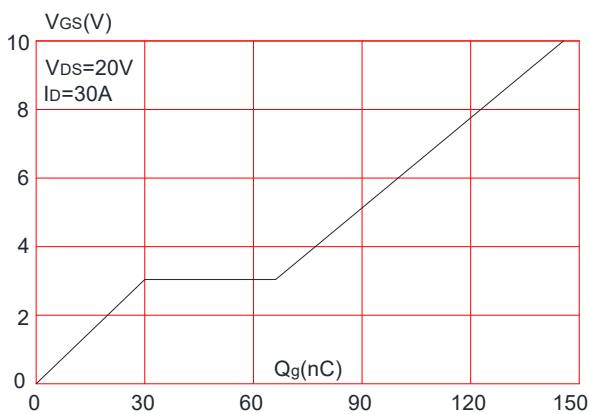
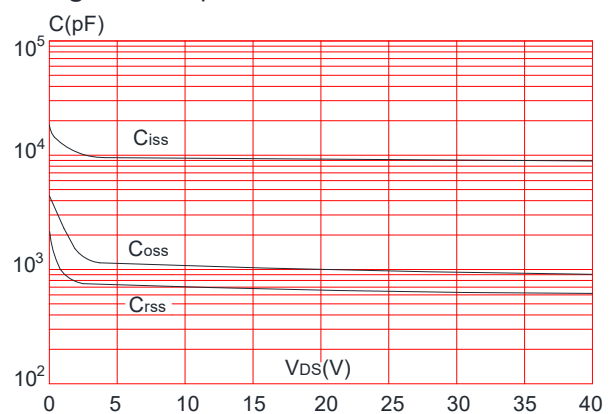


Figure 6: Capacitance Characteristics





JMTE025N04D

Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

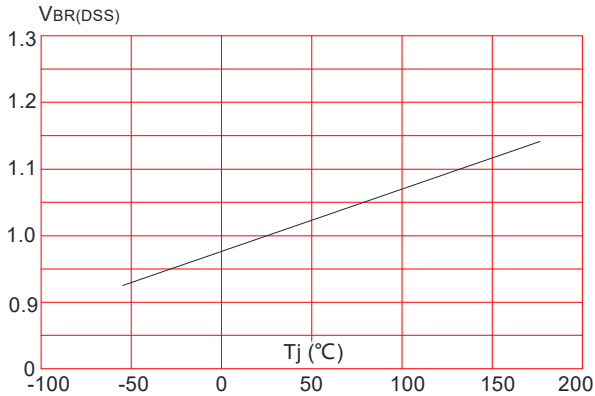


Figure 8: Normalized on Resistance vs. Junction Temperature

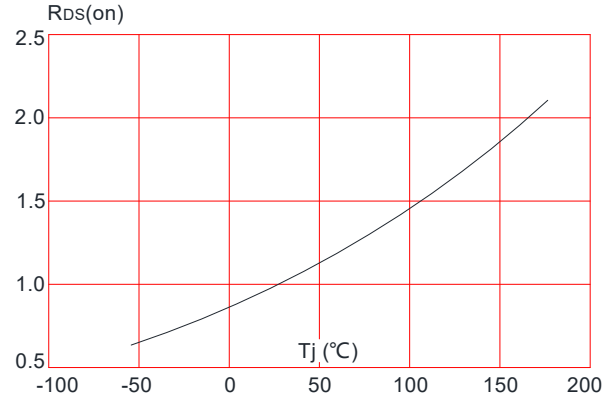


Figure 9: Maximum Safe Operating Area

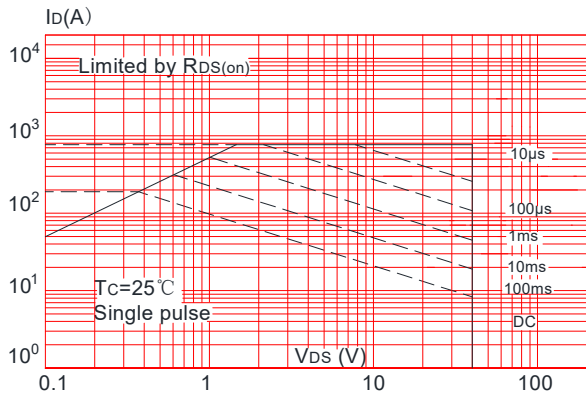


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

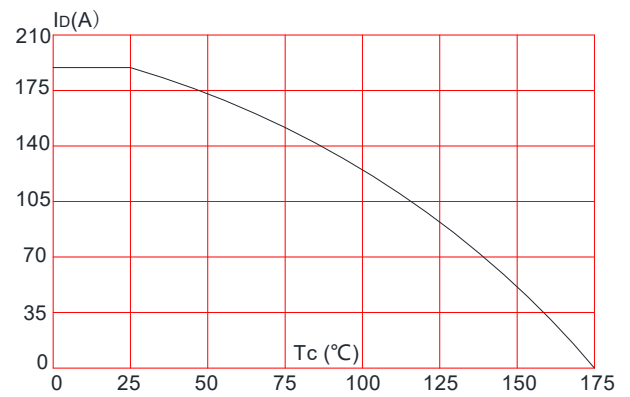
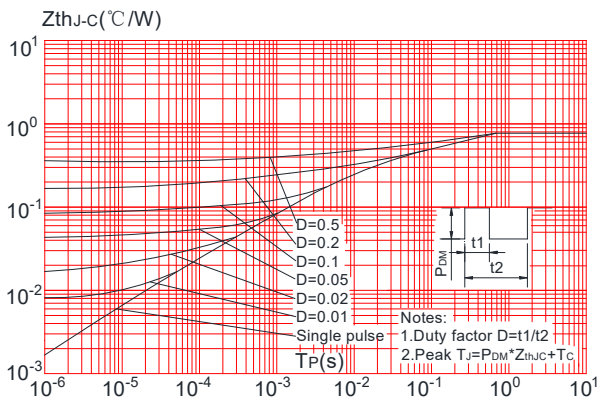


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case



Test Circuit

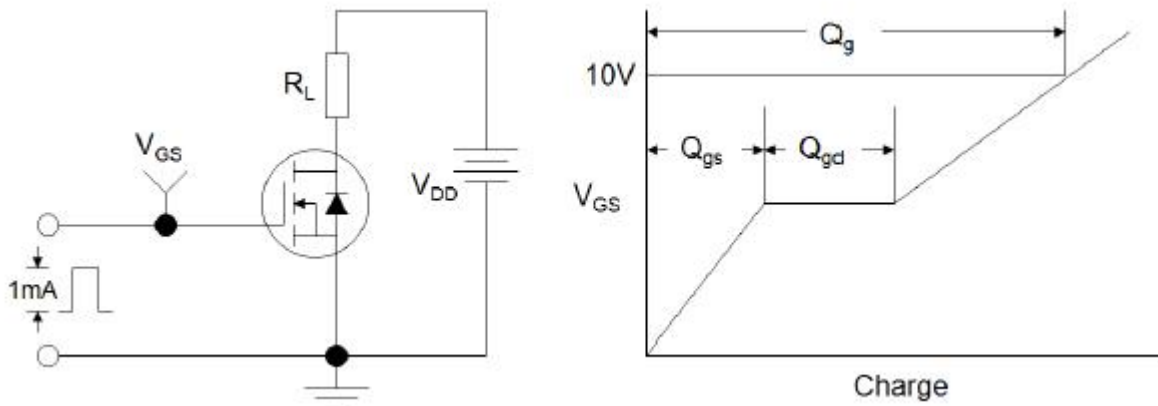


Figure1:Gate Charge Test Circuit & Waveform

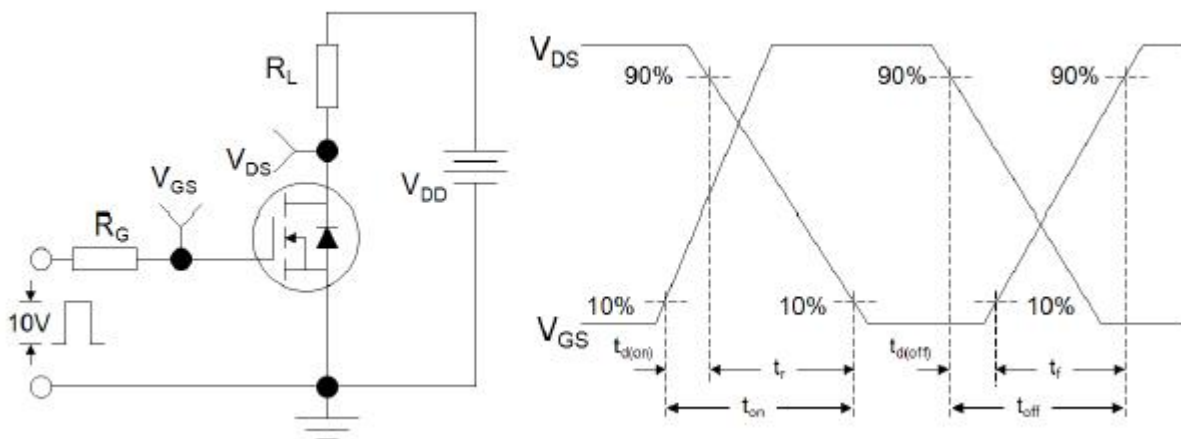


Figure 2: Resistive Switching Test Circuit & Waveforms

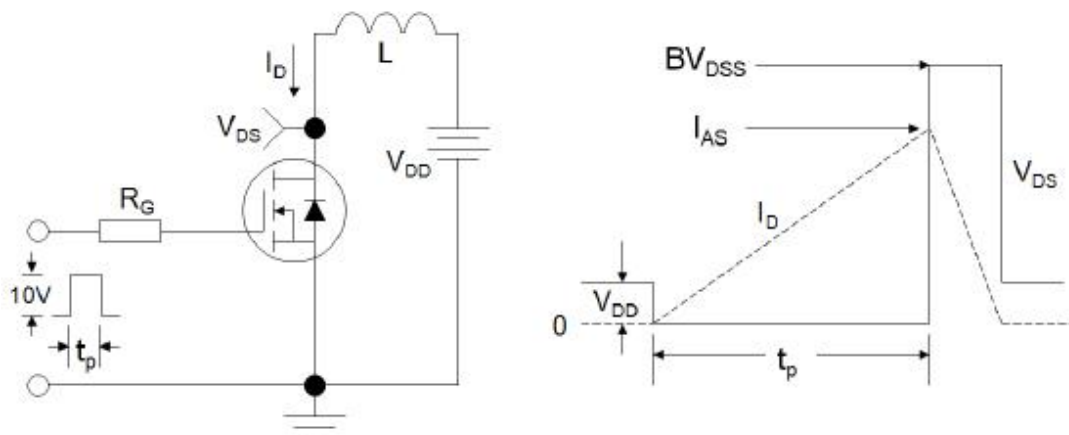
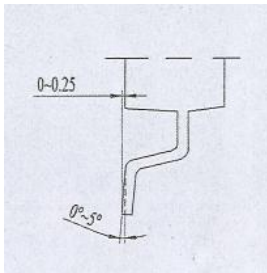
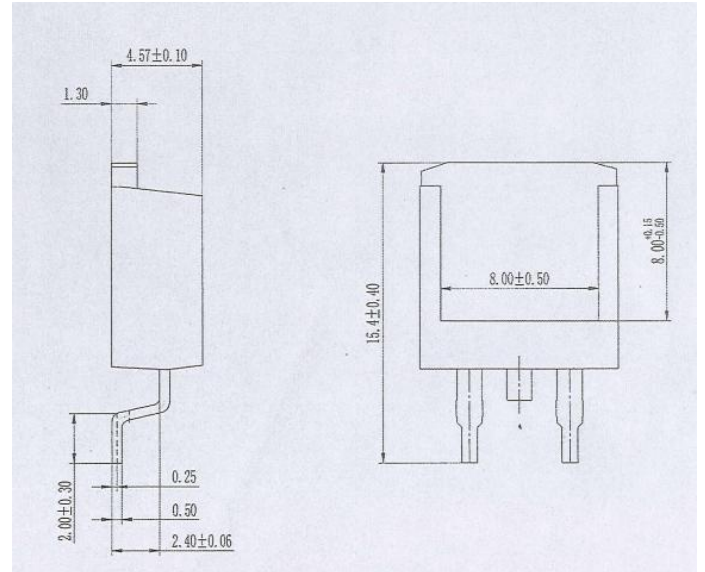
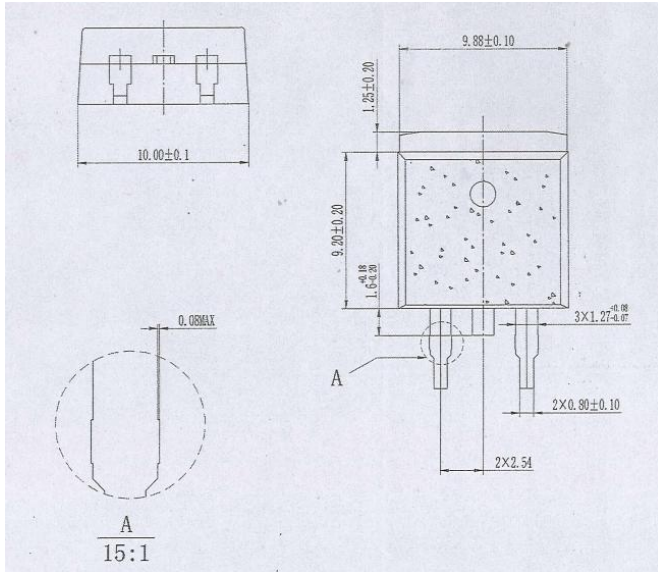


Figure 3:Unclamped Inductive Switching Test Circuit & Waveforms



Package Mechanical Data- TO-263-3L



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