



Description

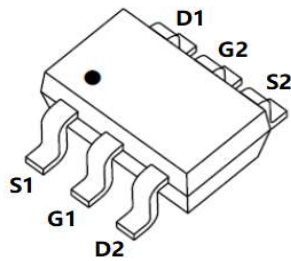
JMT Dual N-channel Enhancement Mode Power MOSFET

Features

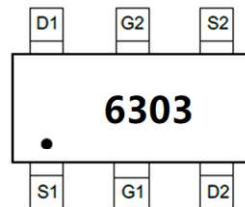
- 20V, 0.75A
 $R_{DS(ON)} < 380m\Omega @ V_{GS} = 4.5V$
 $R_{DS(ON)} < 450m\Omega @ V_{GS} = 2.5V$
- Advanced Trench Technology
- Excellent $R_{DS(ON)}$ and Low Gate Charge
- Lead free product is acquired
- ESD Protected: 2KV

Application

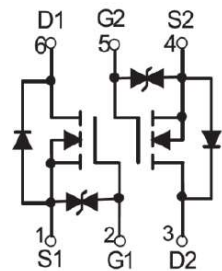
- Load Switch
- PWM Application
- Power management



SOT-363 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)
02K	JMTL2002KDTW	TAPING	SOT-363	-	-	-

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	± 10	V	
I_D	Continuous Drain Current	$T_A = 25^\circ C$	0.75	A
		$T_A = 100^\circ C$	0.5	A
I_{DM}	Pulsed Drain Current <small>note1</small>	3	A	
P_D	Power Dissipation	$T_A = 25^\circ C$	0.2	W
$R_{\theta JA}$	Thermal Resistance, Junction to Case	625	$^\circ C/W$	
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 Characteristic						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250μA	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} = ±10V	-	-	±10	uA
On Characteristics						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	0.3	0.65	1	V
R _{DS(on)}	Static Drain-Source on-Resistance <small>note2</small>	V _{GS} =4.5V, I _D =0.5A	-	250	380	mΩ
		V _{GS} =2.5V, I _D =0.3A	-	350	450	
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =10V, V _{GS} =0V, f=1.0MHz	-	79	-	pF
C _{oss}	Output Capacitance		-	13	-	pF
C _{rss}	Reverse Transfer Capacitance		-	9	-	pF
Q _g	Total Gate Charge	V _{DS} =10V, I _D =0.3A, V _{GS} =4.5V	-	5	-	nC
Q _{gs}	Gate-Source Charge		-	0.8	-	nC
Q _{gd}	Gate-Drain("Miller") Charge		-	1.2	-	nC
Switching Characteristics						
t _{d(on)}	Turn-on Delay Time	V _{DS} =10V, I _D =0.5A, R _{GEN} =3Ω, V _{GS} =4.5V	-	6.7	-	ns
t _r	Turn-on Rise Time		-	4.8	-	ns
t _{d(off)}	Turn-off Delay Time		-	17.3	-	ns
t _f	Turn-off Fall Time		-	7.4	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I _S	Maximum Continuous Drain to Source Diode Forward Current		-	-	0.75	A
I _{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	3	A
V _{SD}	Drain to Source Diode Forward Voltage	V _{GS} =0V, I _S =0.75A	-	-	1.2	V

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

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



Typical Performance Characteristics

Figure 1: Output Characteristics

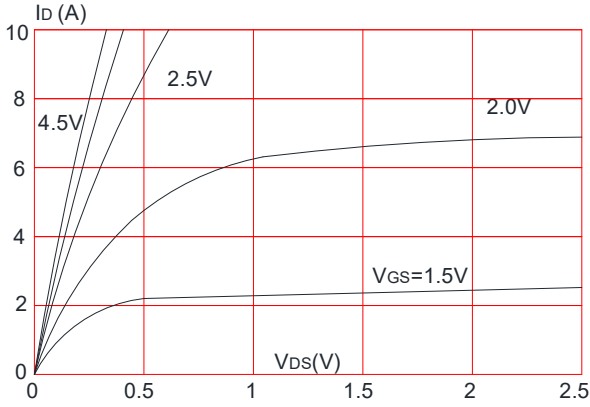


Figure 2: Typical Transfer Characteristics

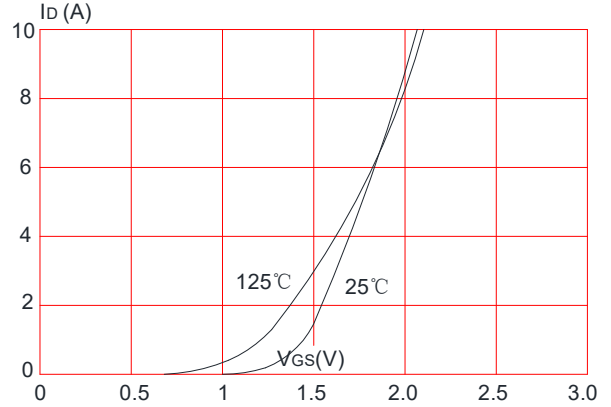


Figure 3: On-resistance vs. Drain Current

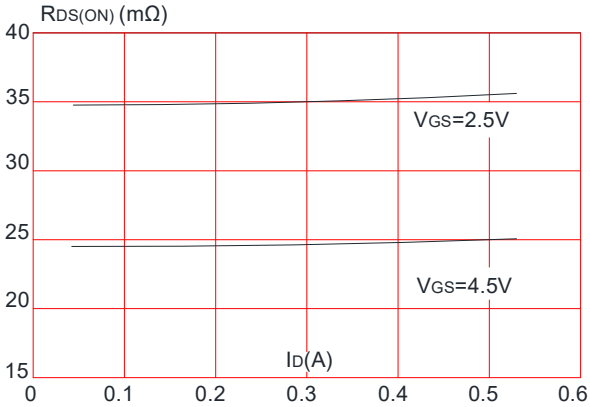


Figure 4: Body Diode Characteristics

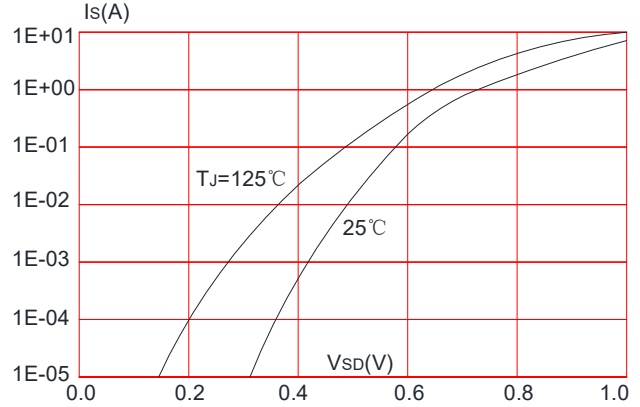


Figure 5: Gate Charge Characteristics

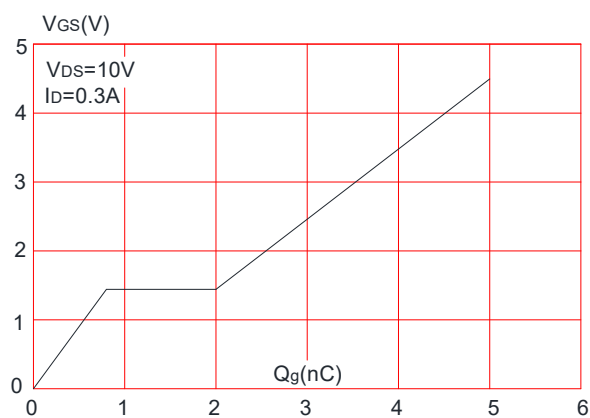


Figure 6: Capacitance Characteristics

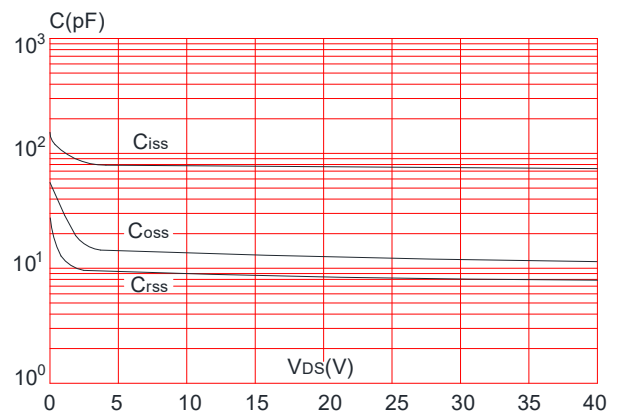




Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

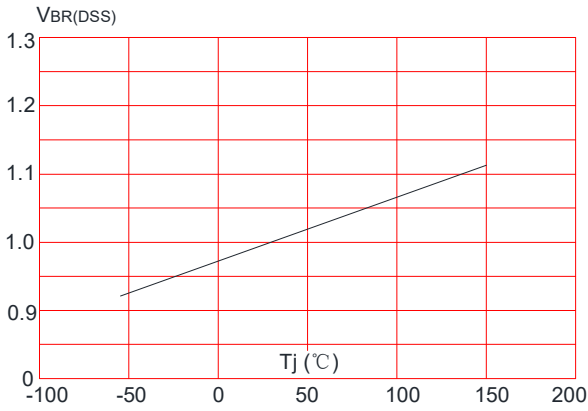


Figure 8: Normalized on Resistance vs. Junction Temperature

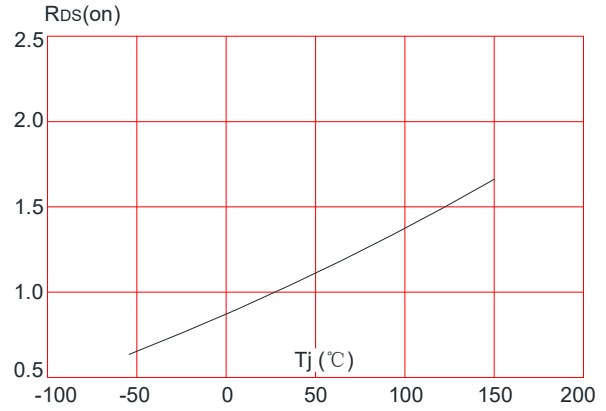


Figure 9: Maximum Safe Operating Area

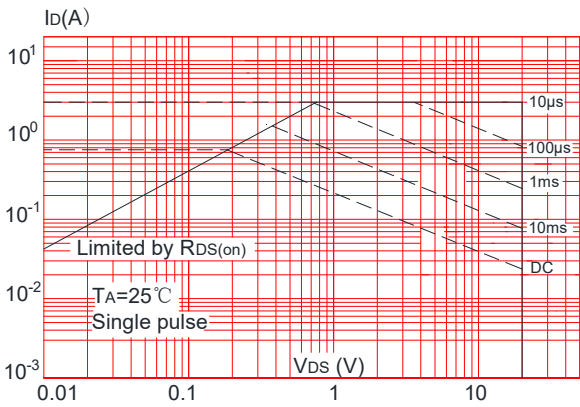


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

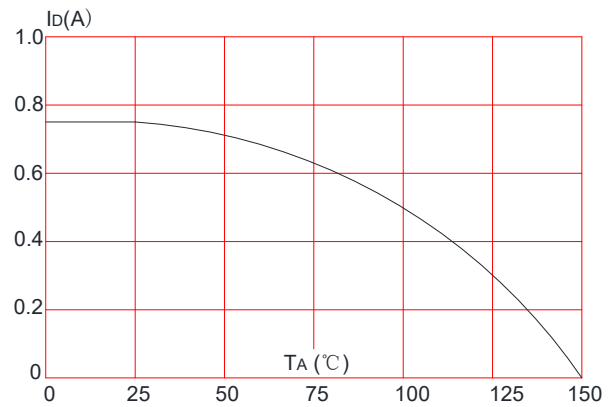
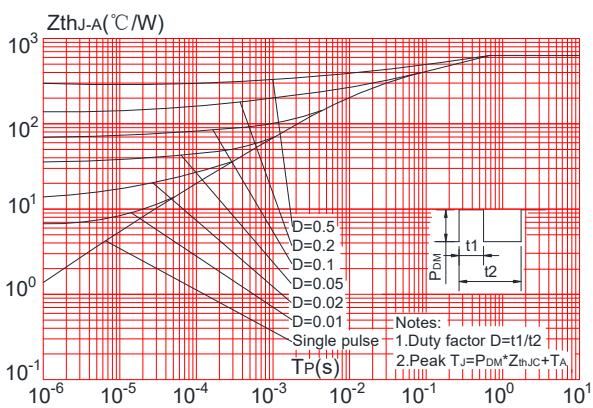


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient



Test Circuit

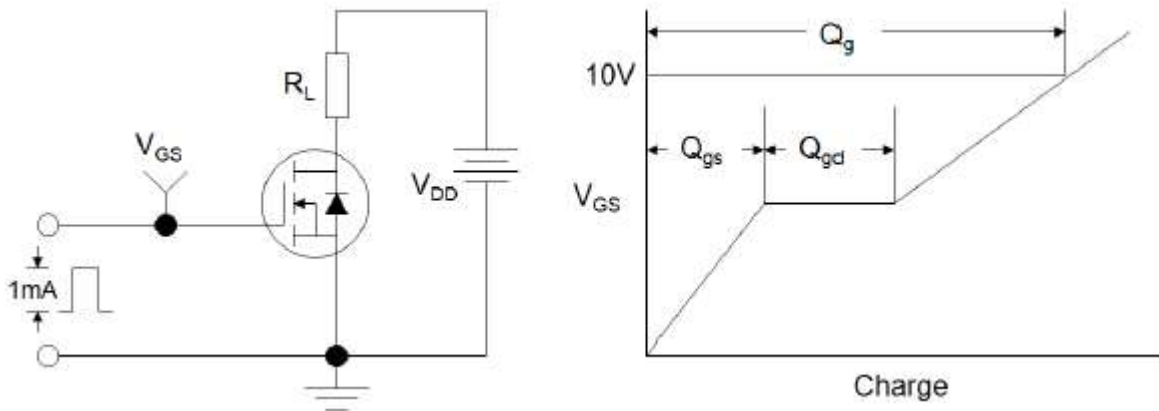


Figure1:Gate Charge Test Circuit & Waveform

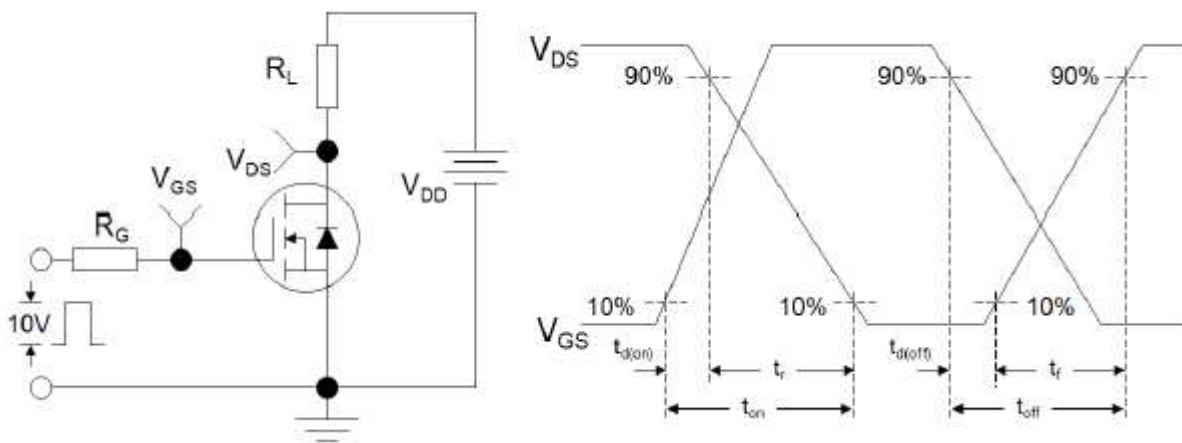


Figure 2: Resistive Switching Test Circuit & Waveforms

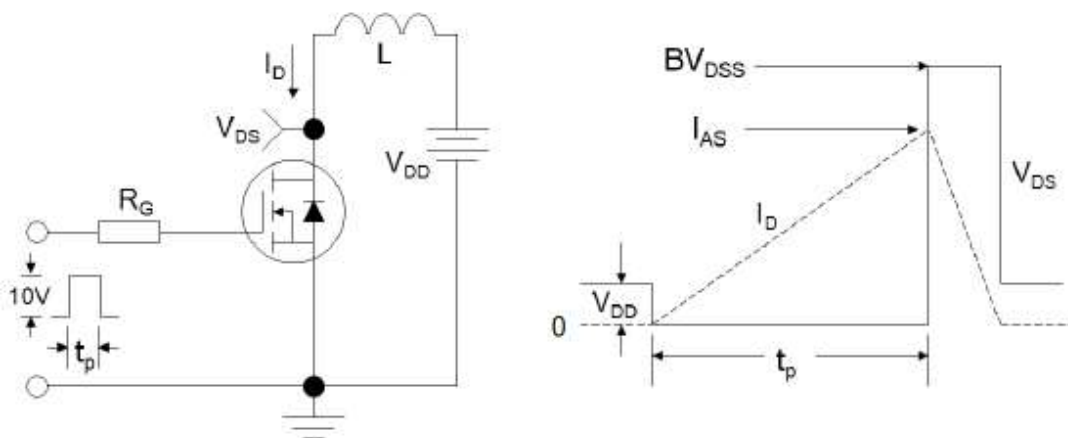
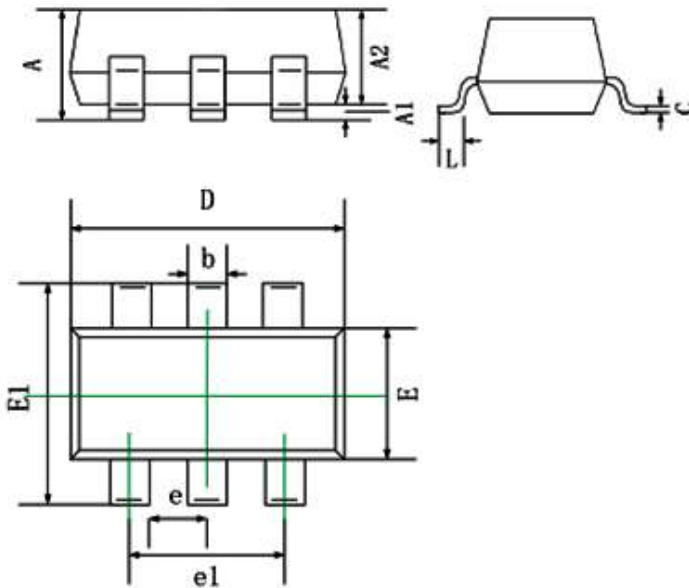


Figure 3:Unclamped Inductive Switching Test Circuit & Waveforms



Package Mechanical Data-SOT-363




Symbol	Millimeters	
	Min.	Max.
A	0.90	1.10
A1	0.00	0.10
A2	0.90	1.00
b	0.15	0.35
c	0.10	0.15
D	2.00	2.20
E	1.15	1.35
E1	2.15	2.40
e	0.65Typ.	
e1	1.20	1.40
L	0.26	0.46

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