Description

JMT Dual N-channel Enhancement Mode Power MosFET

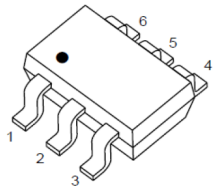
Features

- 30V, 4.8A
  $R_{DS(ON)}$ < 33mΩ @ V_{GS} = 10V
  $R_{DS(ON)}$ < 35mΩ @ V_{GS} = 4.5V
  $R_{DS(ON)}$ < 42mΩ @ V_{GS} = 2.5V
- Advanced Trench Technology
- Excellent $R_{DS(ON)}$ and Low Gate Charge
- Lead Free

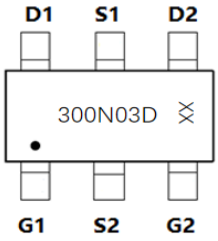
Applications

- Load Switch
- PWM Application
- Power Management

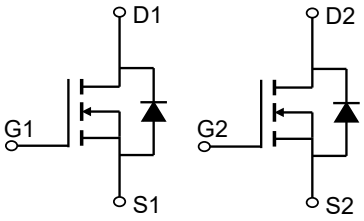
RoHS



SOT-23-6L(Dual) 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)
300N03D	JMTM300N03D	TAPING	SOT-23-6L	7"	3000	120000

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

Symbol	Parameter		Value	Units
V_{DS}	Drain-to-Source Voltage		30	V
V_{GS}	Gate-to-Source Voltage		±12	V
I_D	Continuous Drain Current	T_A = 25°C	4.8	A
		T_A = 100°C	3	
I_{DM}	Pulsed Drain Current (1)		19	A
P_D	Power Dissipation	T_A = 25°C	1.2	W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient(2)		103	°C/W
T_J, T_{STG}	Junction & Storage Temperature Range		-55 to 150	°C

Electrical Characteristics (T_J = 25°C unless otherwise specified)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
Off Characteristics						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	I_D = 250μA, V_{GS} = 0V	30	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = 30V, V_{GS} = 0V	-	-	1.0	μA
I_{GSS}	Gate-Body Leakage Current	V_{DS} = 0V, V_{GS} = ±12V	-	-	±100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = 250μA	0.6	0.95	1.3	V
$R_{DS(ON)}$	Static Drain-Source ON-Resistance(3)	V_{GS} = 10V, I_D = 4A	-	25	33	mΩ
		V_{GS} = 4.5V, I_D = 3A	-	27	35	mΩ
		V_{GS} = 2.5V, I_D = 3A	-	32	42	mΩ
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{GS} = 0V, V_{DS} = 15V, f = 1MHz	-	663	-	pF
C_{oss}	Output Capacitance		-	52	-	pF
C_{rss}	Reverse Transfer Capacitance		-	43	-	pF
Q_g	Total Gate Charge	V_{GS} = 0 to 4.5V V_{DS} = 15V, I_D = 3A	-	7	-	nC
Q_{gs}	Gate Source Charge		-	1.7	-	nC
Q_{gd}	Gate Drain("Miller") Charge		-	1.6	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-On DelayTime	V_{GS} = 4.5V, V_{DD} = 15V I_D= 3A, R_{GEN} = 3Ω	-	4	-	ns
t_r	Turn-On Rise Time		-	17	-	ns
$t_{d(off)}$	Turn-Off DelayTime		-	95	-	ns
t_f	Turn-Off Fall Time		-	37	-	ns
Drain-Source Diode Characteristics and Max Ratings						
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	4.8	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	19	A
V_{SD}	Drain to Source Diode Forward Voltage	V_{GS} = 0V, I_S = 4.8A	-	-	1.2	V
trr	Body Diode Reverse Recovery Time	I_F = 3A, di/dt = 100A/us	-	6.7	-	ns
Qrr	Body Diode Reverse Recovery Charge		-	2.3	-	nC

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

2. $R_{\theta JA}$ is measured with the device mounted on a 1inch^2 pad of 2oz copper FR4 PCB

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

Typical Performance Characteristics

Figure 1: Output Characteristics

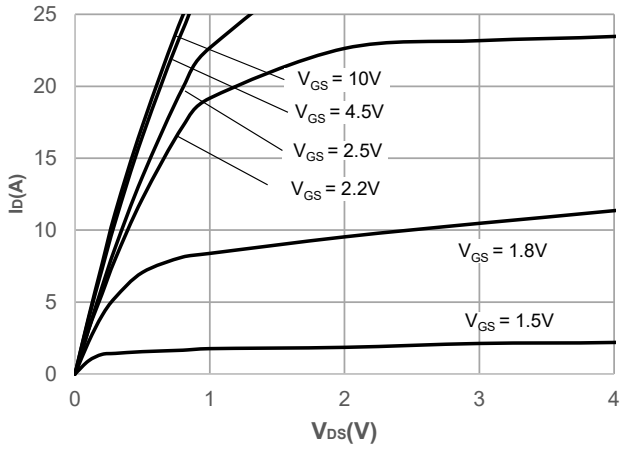


Figure 2: Typical Transfer Characteristics

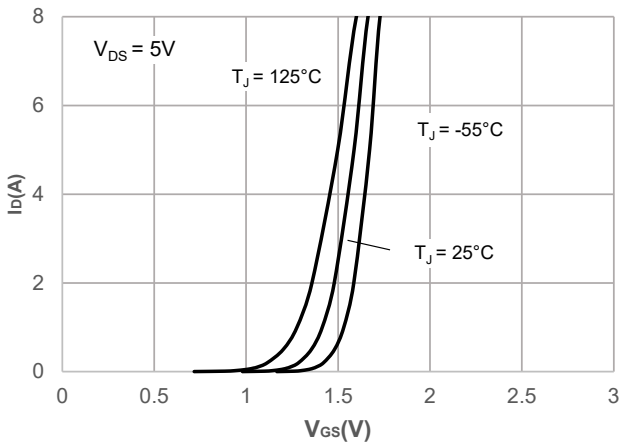


Figure 3: On-resistance vs. Drain Current

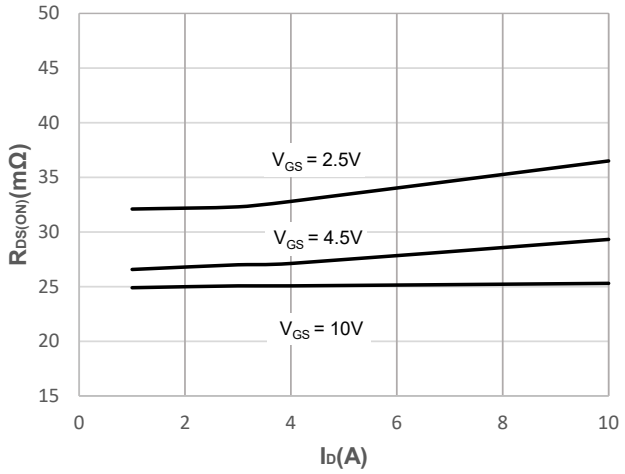


Figure 4: Body Diode Characteristics

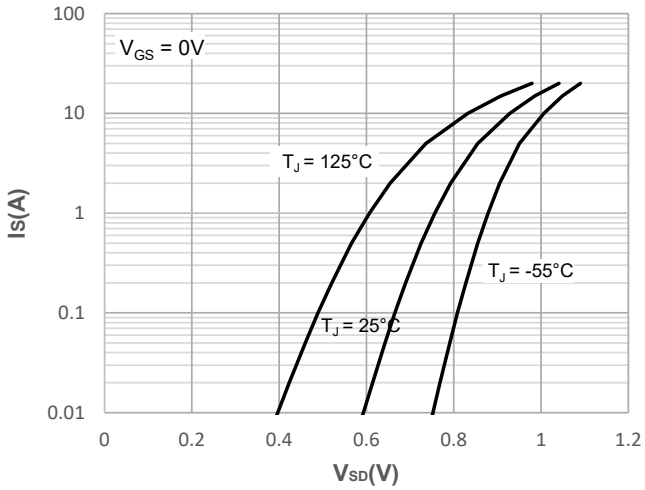


Figure 5: Gate Charge Characteristics

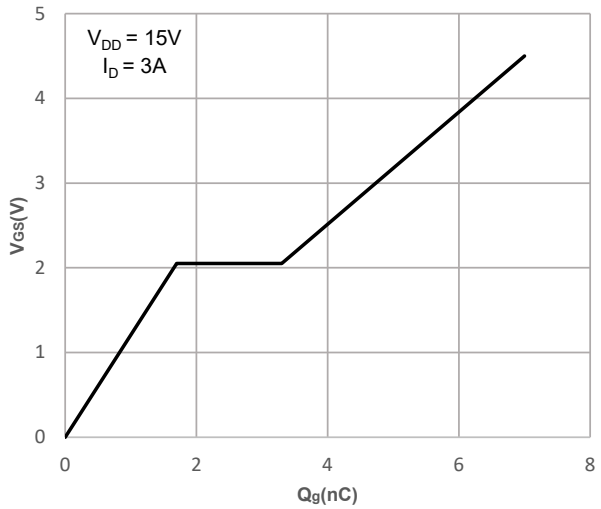
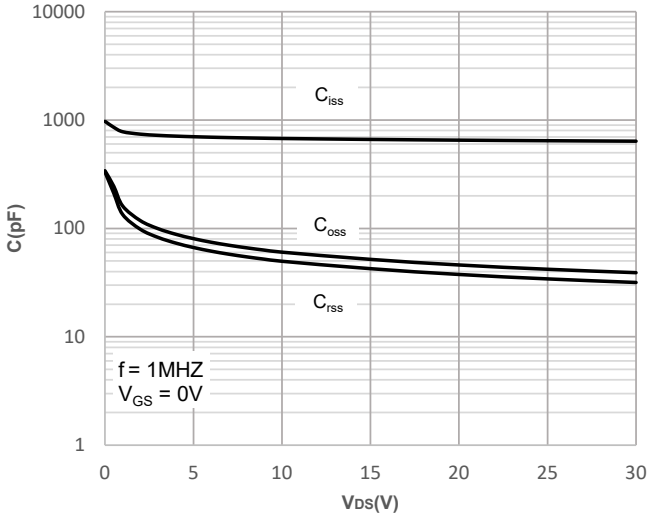


Figure 6: Capacitance Characteristics



Typical Performance Characteristics

Figure 7: Normalized Breakdown voltage vs. Junction Temperature

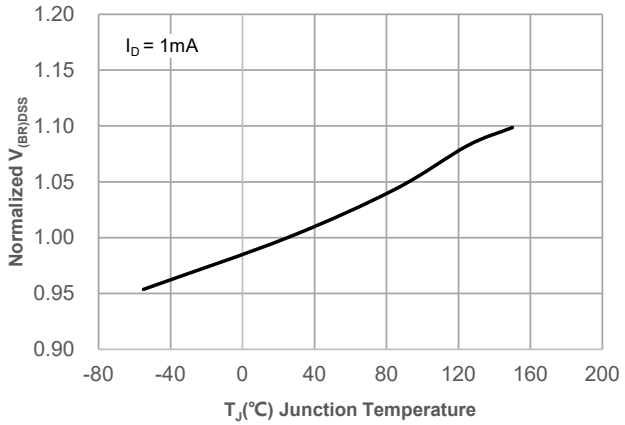


Figure 8: Normalized on Resistance vs. Junction Temperature

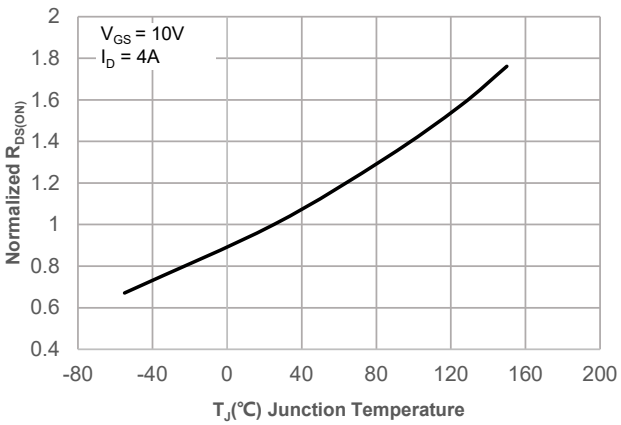


Figure 9: Maximum Safe Operating Area

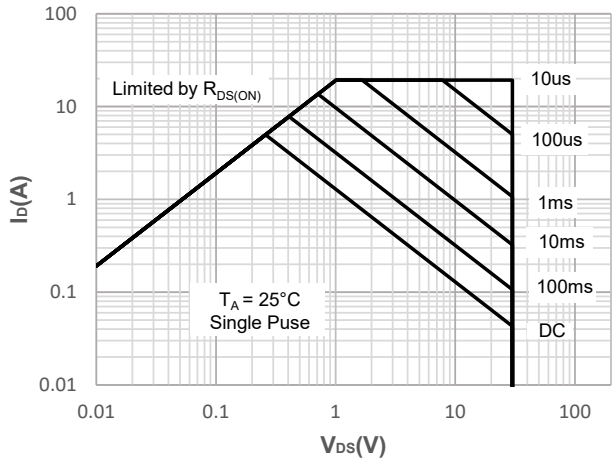


Figure 10: Maximum Continuous Drian Current vs. Ambient Temperature

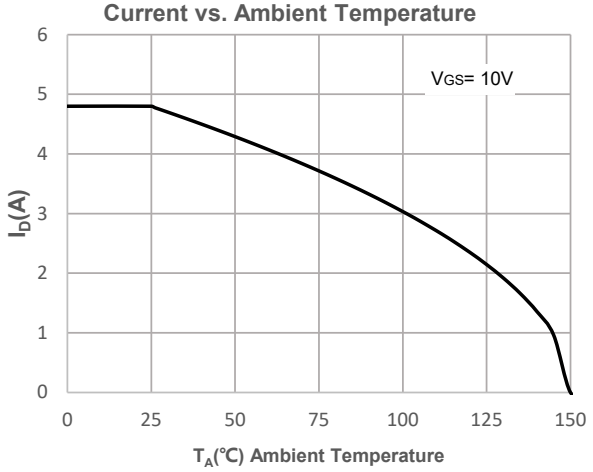


Figure 11: Normalized Maximum Transient Thermal Impedance

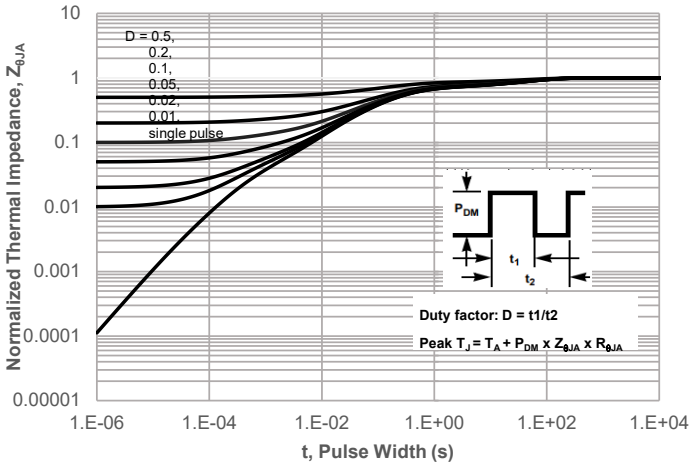
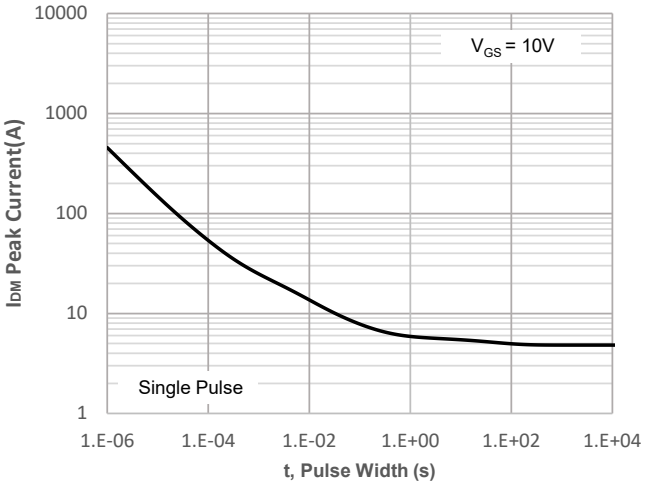


Figure 12: Peak Current Capacity



Test Circuit

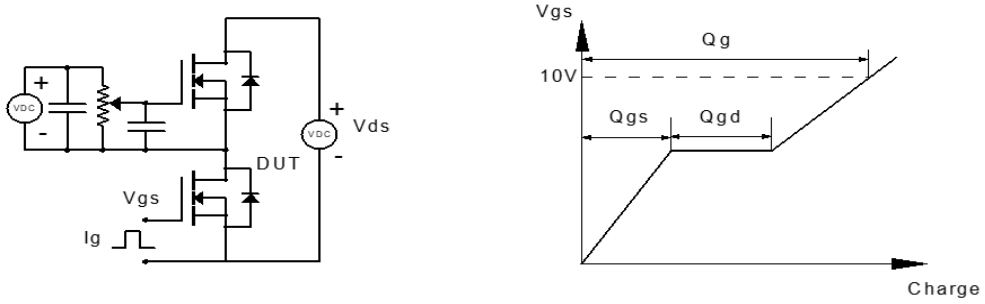


Figure 1: Gate Charge Test Circuit & Waveform

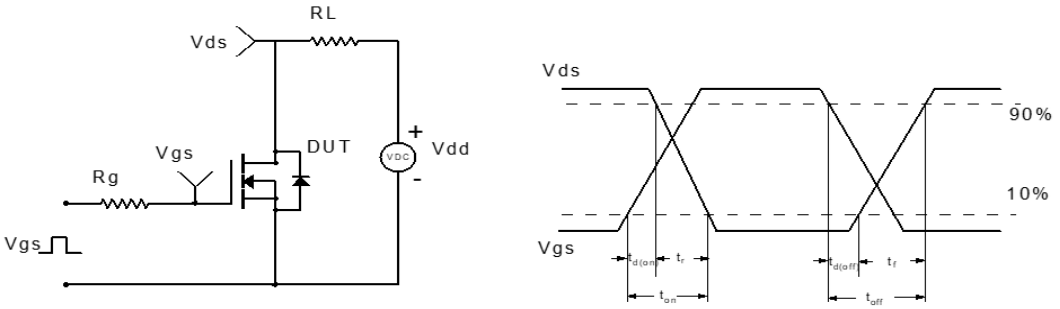


Figure 2: Resistive Switching Test Circuit & Waveform

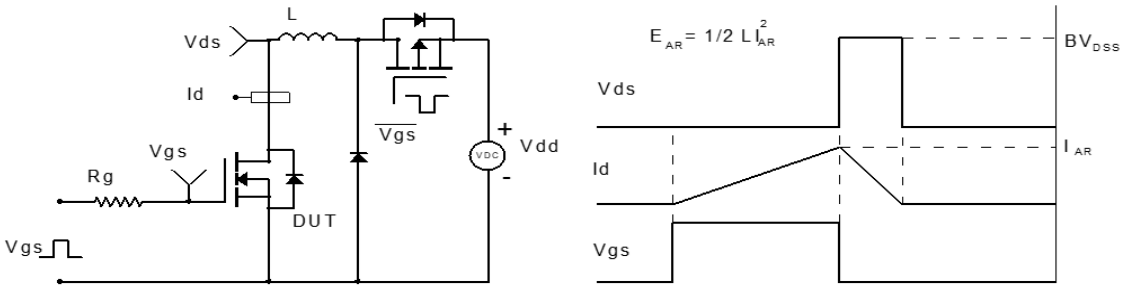


Figure 3: Unclamped Inductive Switching Test Circuit& Waveform

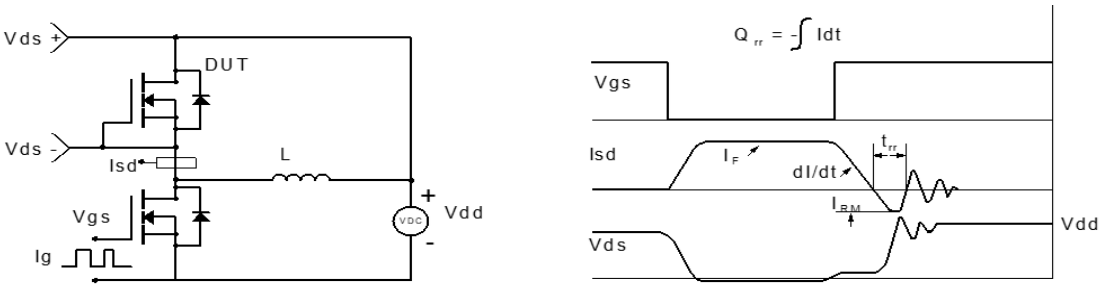
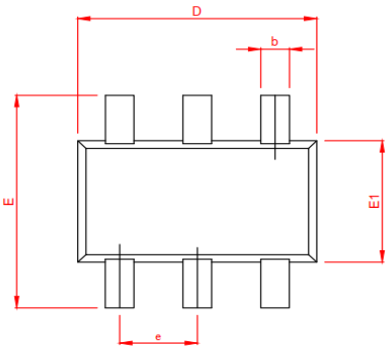
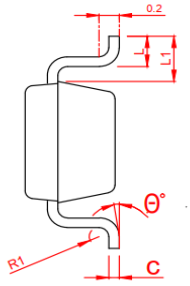
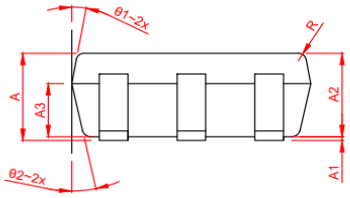


Figure 4: Diode Recovery Test Circuit & Waveform

Package Mechanical Data(SOT-23-6L)







SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	1.06	1.15	1.24
* A1	0.01	0.05	0.09
* A2	1.05	1.10	1.15
A3	0.65	0.70	0.75
* b	0.30	0.35	0.45
* c	0.127REF		
* D	2.87	2.92	2.97
* E	2.72	2.80	2.88
* E1	1.55	1.60	1.65
* e	0.95BSC		
* L	0.32	0.40	0.48
* L1	0.55	0.60	0.65
R	0.10 REF		
R1	0.12 REF		
* θ	0	--	8°
θ1	8°	10°	12°
θ2	10°	12°	14°