

100V_{DS}/±20V_{GS} N-Channel Enhancement Mode MOSFET

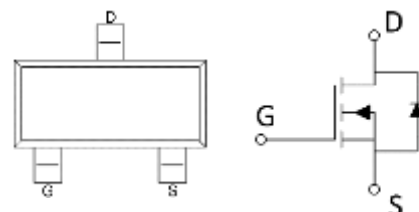
Features

- $V_{DS}=100V, I_D=3A$
- $R_{DS(ON)}=210m\Omega$ (TYP.) $V_{GS}=10V$
- Reliable and Rugged
- Avalanche Rated
- Low On-Resistance
- High Current Capability

Applications

- Load Switch
- Power management in portable/desktop PCs
- DC/DC conversion

SOT23-3L



Ordering Information

Device	package	Device Marking	Package Qty.
JMTL3N10A	SOT-23-3L	BC	3000/PCS

Absolute Maximum Ratings ($T_C=25^\circ C$, unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage ($V_{GS}=0V$)	V_{DS}	100	V
Gate-Source Voltage ($V_{GS}=0V$, static)	V_{GS}	±20	V
Continuous Drain Current ($T_C=25^\circ C$)	I_D	3	A
Continuous Drain Current ($T_C=100^\circ C$)		1.9	A
Pulsed Drain Current	I_{DM}	15	A
Maximum Power Dissipation ($T_C=25^\circ C$)	P_D	1.5	W
Maximum Power Dissipation ($T_C=100^\circ C$)		0.9	W
Operating, Storage Temperature Range	T_J, T_{STG}	-55~150	$^\circ C$

Electrical Characteristics

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	100	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=24V, V_{GS}=0V$	-	-	1	μA
Gate -Source Leakage Current	I_{GSS}	$V_{GS}=\pm 12V, V_{DS}=0V$	-	-	±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.5	1.8	1.1	V
Drain-Source On-stage Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=5.8A$	-	200	280	m Ω
		$V_{GS}=4.5V, I_D=5A$	-	220	310	

Thermal Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal Resistance,Junction-to-Case	$R_{\theta JC}$	-	60	-	$^{\circ}\text{C}/\text{W}$
Thermal Resistance,Junction-to-Ambient	$R_{\theta JA}$	-	125	-	$^{\circ}\text{C}/\text{W}$

Dynamic Characteristics

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Input capacitance	C_{iss}	$V_{DS}=15\text{V}$	-	440	-	pF
Output capacitance	C_{oss}	$V_{GS}=0\text{V}$	-	14	-	
Reverse transfer capacitance	C_{rss}	$f=1\text{MHz}$	-	10	-	
Gate Resistance	R_g	$f=1\text{MHz}$	-	1.4	-	Ω
Total Gate Charge	Q_g	$V_{DS}=15\text{V}$	-	3.1	-	nC
Gate Source Charge	Q_{gs}	$V_{GS}=4.5\text{V}$	-	0.4	-	
Gate Drain Charge	Q_{gd}	$I_D=5.8\text{A}$	-	1.3	-	
Turn-on delay Time	$t_{d(on)}$	$V_{GS}=10\text{V}$	-	4.4	-	ns
Rise time	t_r	$V_{DS}=15\text{V}$	-	2.6	-	
Turn-off delay Time	$t_{d(off)}$	$R_L=2.7\Omega$	-	25.5	-	
Fall time	t_f	$R_G=3\Omega$	-	4.1	-	

Reverse Diode Characteristics

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Body Diode Forward Voltage	V_{SD}	$V_{GS}=0\text{V}, I_{SD}=1\text{A}$	-	0.85	1.2	V
Reverse Recovery Time	t_{rr}	$V_{GS}=0\text{V}, I_{SD}=5\text{A}$	-	16	-	ns
Reverse Recovery Charge	Q_{rr}	$d_i/d_t=100\text{A}/\mu\text{s}$	-	9	-	nC

Electrical Characteristics Diagrames

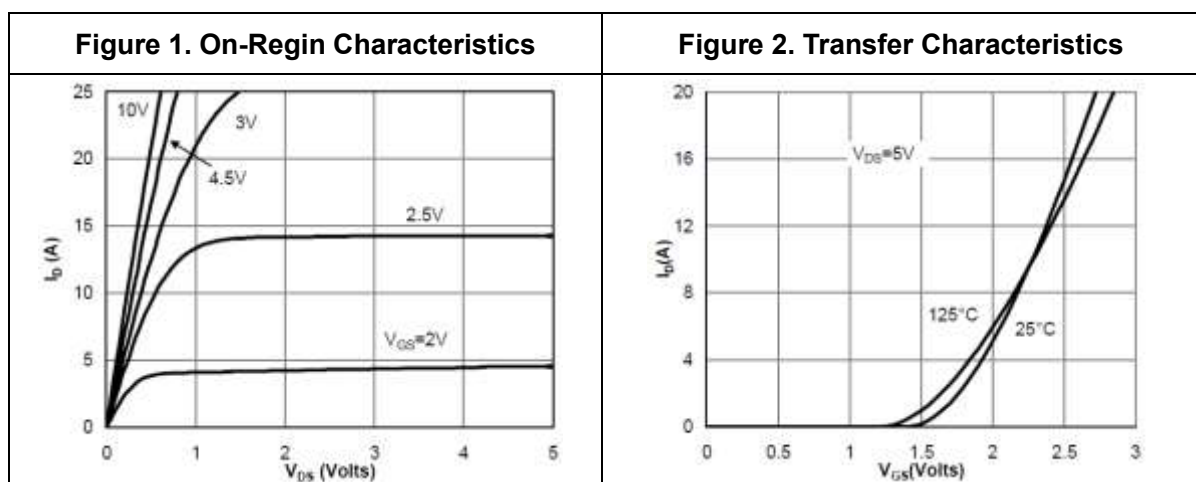


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

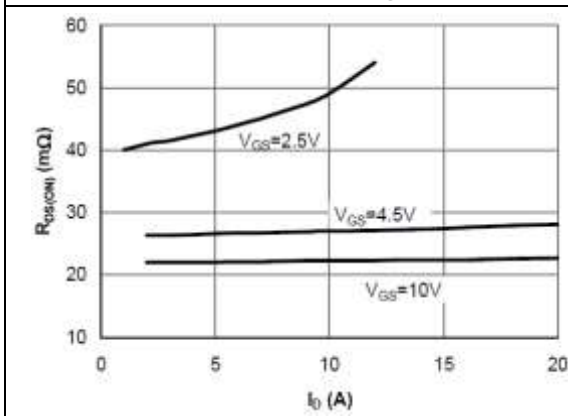


Figure 4. On-Resistance vs. Junction Temperature

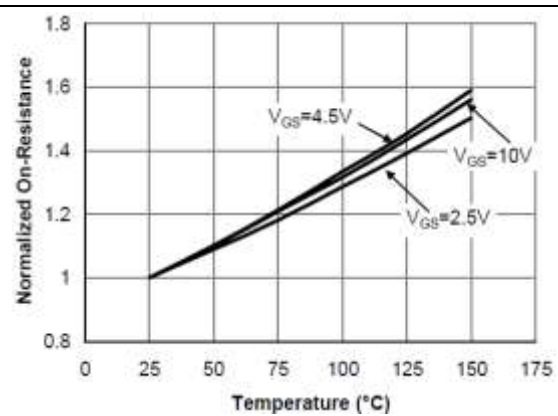


Figure 5. On-Resistance vs. Gate-Source Voltage

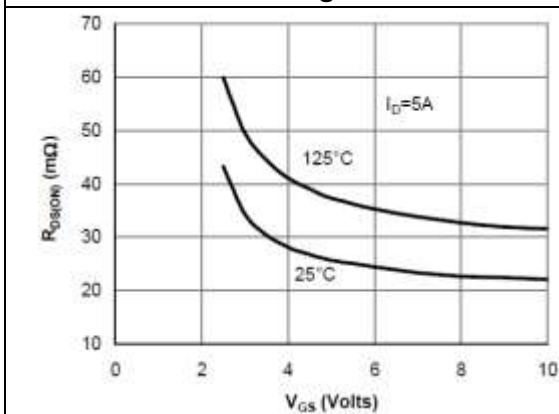


Figure 6. Body-Diode Characteristics

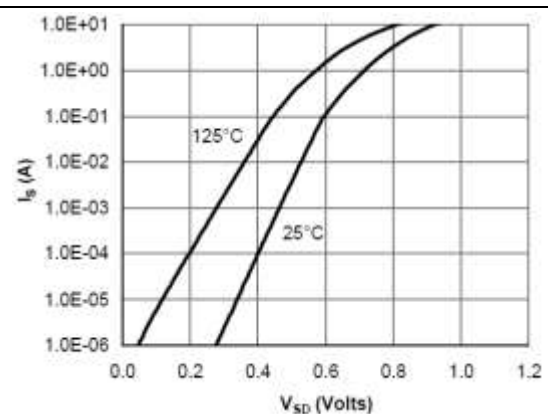


Figure 7. Gate-Charge Characteristics

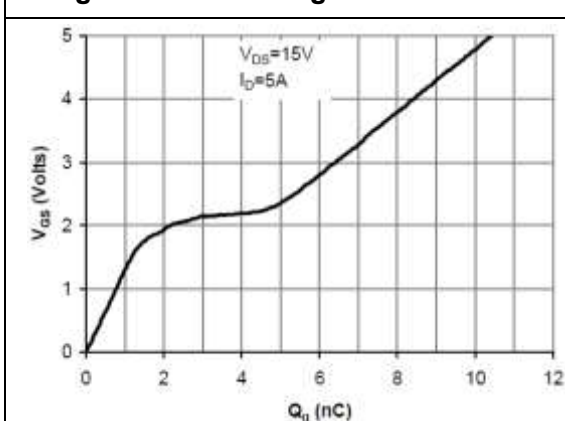


Figure 8. Capacitance Characteristics

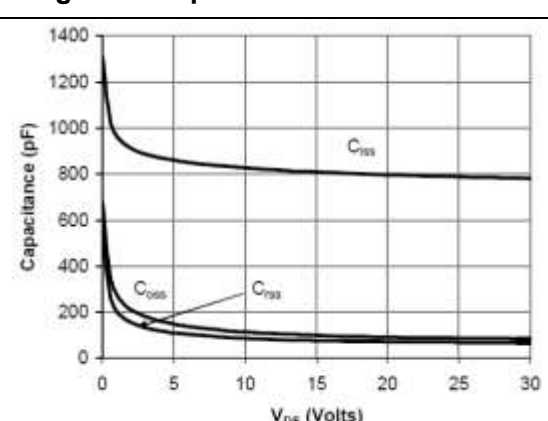


Figure 9. Maximum Forward Biased Safe Operating Area

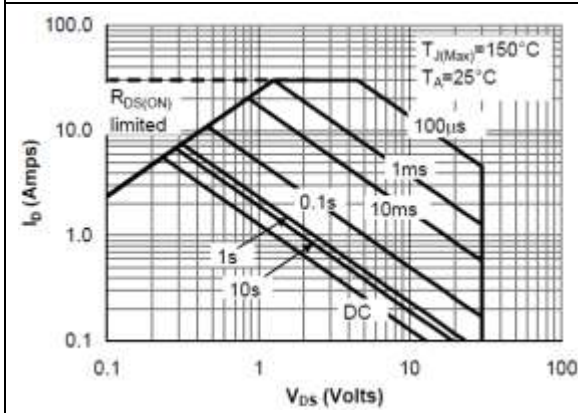


Figure 10. Single Pulse Power Rating Junction-to-Ambient

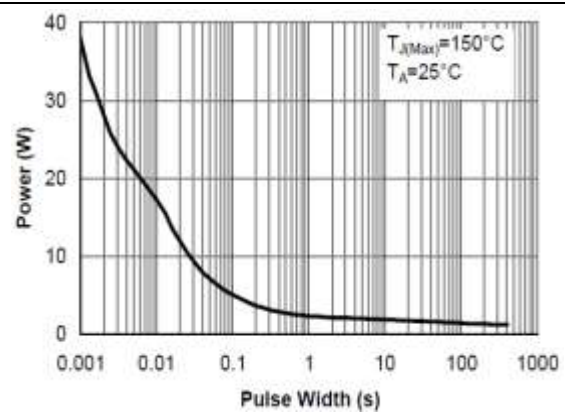
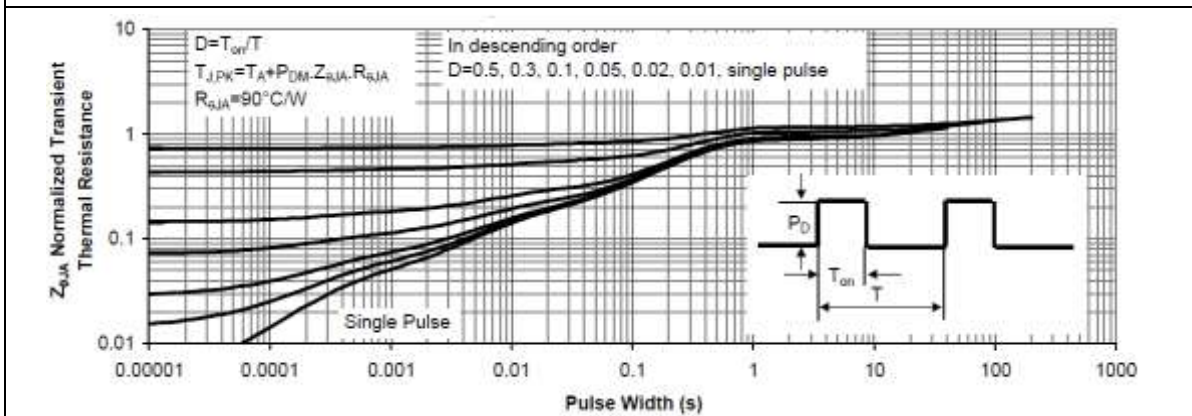


Figure 11. Normalized Maximum Transient Thermal Impedance



Physical Dimensions

符号	尺寸(mm)			符号	尺寸(mm)		
	最小值	典型值	最大值		最小值	典型值	最大值
A	0.90	1.03	1.10	A1	0.01	0.05	0.10
bp	0.38	0.42	0.48	c	0.09	0.13	0.15
D	2.80	2.92	3.00	E	1.20	1.33	1.40
e	-	1.90	-	e1	-	0.95	-
HE	2.10	2.40	2.50	Lp	0.15	0.23	0.45
Q	0.45	0.49	0.55	v	-	0.20	-
w	-	0.10	-				

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