

N-CHANNEL POWER MOSFET

LBSS123LT1

FEATURE

- Pb-Free Package is available.

DEVICE MARKING AND ORDERING INFORMATION

Device	Marking	Shipping
LBSS123LT1	SA	3000/Tape&Reel
LBSS123LT1G	SA (Pb-Free)	3000/Tape&Reel
LBSS123LT3	SA	10000/Tape&Reel
LBSS123LT3G	SA (Pb-Free)	10000/Tape&Reel

MAXIMUM RATINGS

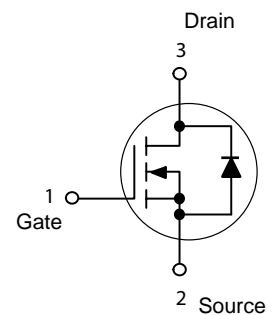
Rating	Symbol	Value	Unit
Drain-Source Voltage	V_{DSS}	100	Vdc
Gate-Source Voltage	V_{GS}	± 20	Vdc
- Continuous	V_{GSM}	± 40	Vpk
- Non-repetitive ($t_p \leq 50 \mu s$)			
Drain Current	I_D	0.17	A _{dc}
Continuous (Note 1.)			
Pulsed (Note 2.)	I_{DM}	0.68	

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Total Device Dissipation FR-5 Board (Note 3.)	P_D	225	mW
$T_A = 25^\circ C$		1.8	mW/ $^\circ C$
Derate above $25^\circ C$			
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	556	$^\circ C/W$
Junction and Storage Temperature	T_J, T_{stg}	-55 to +150	$^\circ C$

1. The Power Dissipation of the package may result in a lower continuous drain current.
2. Pulse Width $\leq 300 \mu s$, Duty Cycle $\leq 2.0\%$.
3. FR-5 = $1.0 \times 0.75 \times 0.062$ in.

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ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
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OFF CHARACTERISTICS

Drain–Source Breakdown Voltage ($V_{GS} = 0, I_D = 250 \mu\text{Adc}$)	$V_{(BR)DSS}$	100	–	–	Vdc
Zero Gate Voltage Drain Current ($V_{GS} = 0, V_{DS} = 100 \text{Vdc}$) $T_J = 25^\circ\text{C}$ $T_J = 125^\circ\text{C}$	I_{DSS}	– –	– –	15 60	μAdc
Gate–Body Leakage Current ($V_{GS} = 20 \text{Vdc}, V_{DS} = 0$)	I_{GSS}	–	–	50	nAdc

ON CHARACTERISTICS (Note 4.)

Gate Threshold Voltage ($V_{DS} = V_{GS}, I_D = 1.0 \text{mAdc}$)	$V_{GS(th)}$	0.8	–	2.8	Vdc
Static Drain–Source On–Resistance ($V_{GS} = 10 \text{Vdc}, I_D = 100 \text{mAdc}$)	$r_{DS(on)}$	–	5.0	6.0	Ω
Forward Transconductance ($V_{DS} = 25 \text{Vdc}, I_D = 100 \text{mAdc}$)	g_{fs}	80	–	–	mmhos

DYNAMIC CHARACTERISTICS

Input Capacitance ($V_{DS} = 25 \text{Vdc}, V_{GS} = 0, f = 1.0 \text{MHz}$)	C_{iss}	–	20	–	pF
Output Capacitance ($V_{DS} = 25 \text{Vdc}, V_{GS} = 0, f = 1.0 \text{MHz}$)	C_{oss}	–	9.0	–	pF
Reverse Transfer Capacitance ($V_{DS} = 25 \text{Vdc}, V_{GS} = 0, f = 1.0 \text{MHz}$)	C_{rss}	–	4.0	–	pF

SWITCHING CHARACTERISTICS(4)

Turn–On Delay Time	($V_{CC} = 30 \text{Vdc}, I_C = 0.28 \text{Adc},$ $V_{GS} = 10 \text{Vdc}, R_{GS} = 50 \Omega$)	$t_{d(on)}$	–	20	–	ns
Turn–Off Delay Time		$t_{d(off)}$	–	40	–	ns

REVERSE DIODE

Diode Forward On–Voltage ($I_D = 0.34 \text{Adc}, V_{GS} = 0 \text{Vdc}$)	V_{SD}	–	–	1.3	V
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4. Pulse Test: Pulse Width $\leq 300 \mu\text{s}$, Duty Cycle $\leq 2.0\%$.

TYPICAL ELECTRICAL CHARACTERISTICS

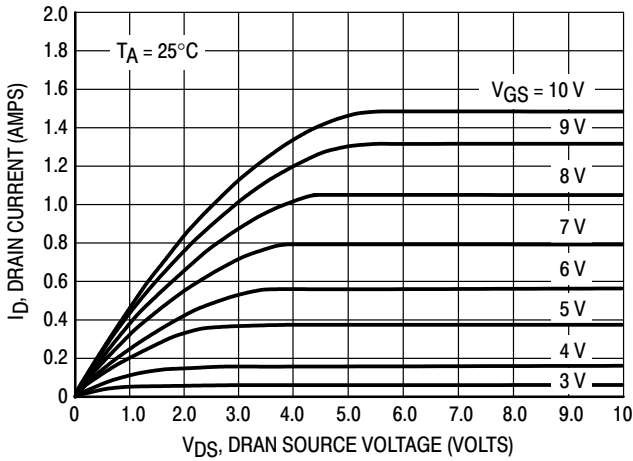


Figure 1. Ohmic Region

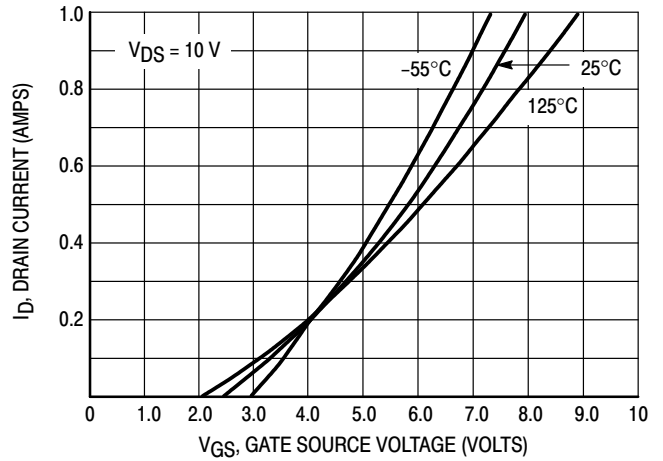


Figure 2. Transfer Characteristics

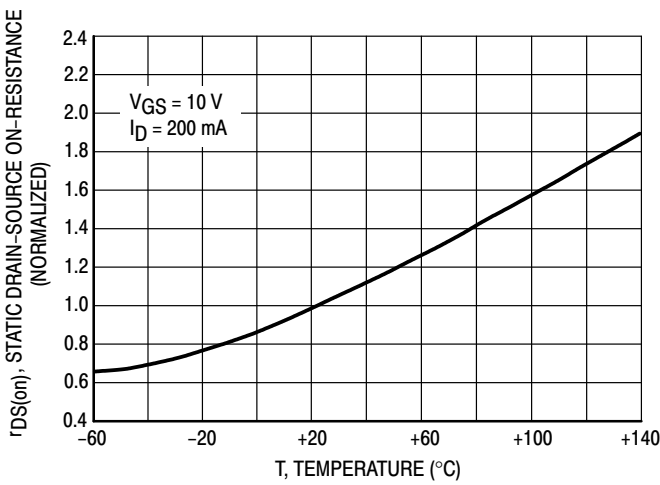


Figure 3. Temperature versus Static Drain-Source On-Resistance

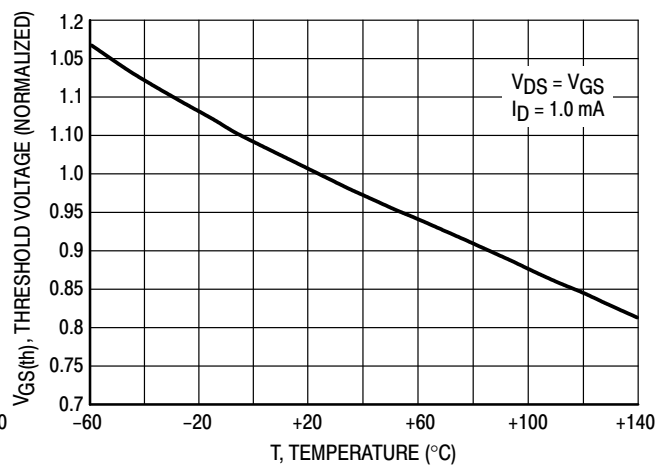
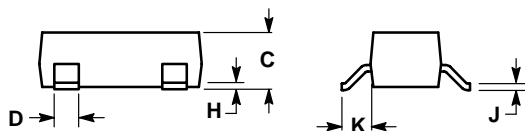
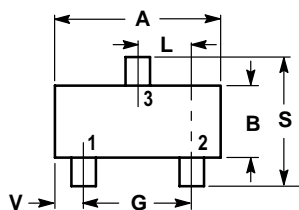


Figure 4. Temperature versus Gate Threshold Voltage

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NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.1102	0.1197	2.80	3.04
B	0.0472	0.0551	1.20	1.40
C	0.0350	0.0440	0.89	1.11
D	0.0150	0.0200	0.37	0.50
G	0.0701	0.0807	1.78	2.04
H	0.0005	0.0040	0.013	0.100
J	0.0034	0.0070	0.085	0.177
K	0.0140	0.0285	0.35	0.69
L	0.0350	0.0401	0.89	1.02
S	0.0830	0.1039	2.10	2.64
V	0.0177	0.0236	0.45	0.60

- PIN 1. Gate
 2. Source
 3. Drain

