

N-CHANNEL POWER MOSFET

LMBF170LT1

FEATURE

- Pb-Free Package is available.

DEVICE MARKING AND ORDERING INFORMATION

Device	Marking	Shipping
LMBF170LT1	6Z	3000/Tape&Reel
LMBF170LT1G	6Z (Pb-Free)	3000/Tape&Reel
LMBF170LT3	6Z	10000/Tape&Reel
LMBF170LT3G	6Z (Pb-Free)	10000/Tape&Reel

MAXIMUM RATINGS

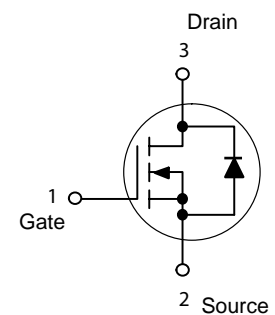
Rating	Symbol	Value	Unit
Drain-Source Voltage	V_{DSS}	60	Vdc
Drain-Gate Voltage	V_{DGS}	60	Vdc
Gate-Source Voltage	V_{GS}	± 20	Vdc
- Continuous	V_{GSM}	± 40	Vpk
- Non-repetitive ($t_p \leq 50 \mu s$)			
Drain Current - Continuous	I_D	0.5	Adc
- Pulsed	I_{DM}	0.8	

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Total Device Dissipation FR-5 Board (Note 1.) $T_A = 25^\circ C$ Derate above $25^\circ C$	P_D	225 1.8	mW mW/ $^\circ C$
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. 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	Max	Unit
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OFF CHARACTERISTICS

Drain–Source Breakdown Voltage ($V_{GS} = 0, I_D = 100 \mu\text{A}$)	$V_{(BR)DSS}$	60	–	Vdc
Gate–Body Leakage Current, Forward ($V_{GSF} = 15 \text{ Vdc}, V_{DS} = 0$)	I_{GSS}	–	10	nAdc

ON CHARACTERISTICS (Note 2.)

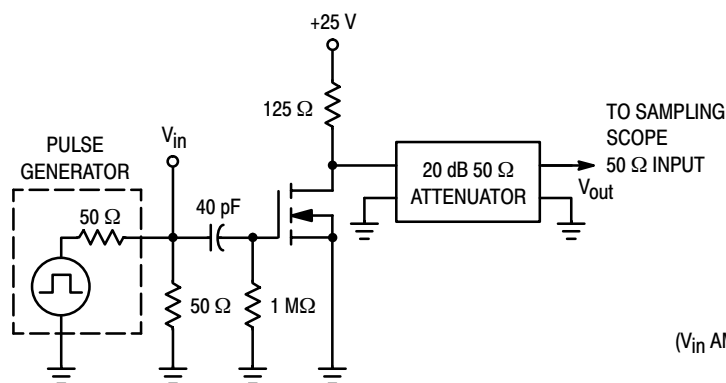
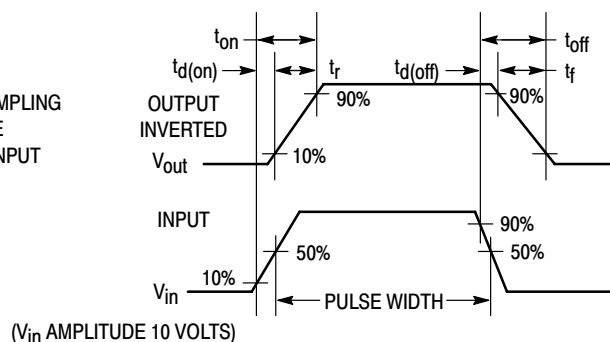
Gate Threshold Voltage ($V_{DS} = V_{GS}, I_D = 1.0 \text{ mA}$)	$V_{GS(th)}$	0.8	3.0	Vdc
Static Drain–Source On–Resistance ($V_{GS} = 10 \text{ Vdc}, I_D = 200 \text{ mA}$)	$r_{DS(on)}$	–	5.0	Ω
On–State Drain Current ($V_{DS} = 25 \text{ Vdc}, V_{GS} = 0$)	$I_{D(off)}$	–	0.5	μA

DYNAMIC CHARACTERISTICS

Input Capacitance ($V_{DS} = 10 \text{ Vdc}, V_{GS} = 0 \text{ V}, f = 1.0 \text{ MHz}$)	C_{iss}	–	60	pF
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SWITCHING CHARACTERISTICS (Note 2.)

Turn–On Delay Time	($V_{DD} = 25 \text{ Vdc}, I_D = 500 \text{ mA}, R_{gen} = 50 \Omega$) Figure 1	$t_{d(on)}$	–	10	ns
Turn–Off Delay Time		$t_{d(off)}$	–	10	

 2. Pulse Test: Pulse Width $\leq 300 \mu\text{s}$, Duty Cycle $\leq 2.0\%$.

Figure 1. Switching Test Circuit

Figure 2. Switching Waveform

TYPICAL ELECTRICAL CHARACTERISTICS

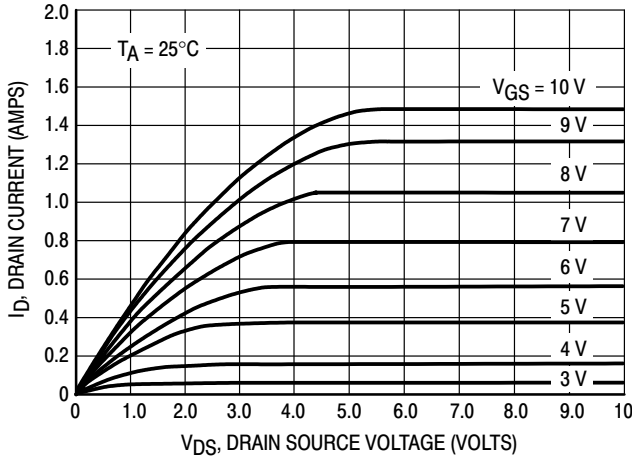


Figure 3. Ohmic Region

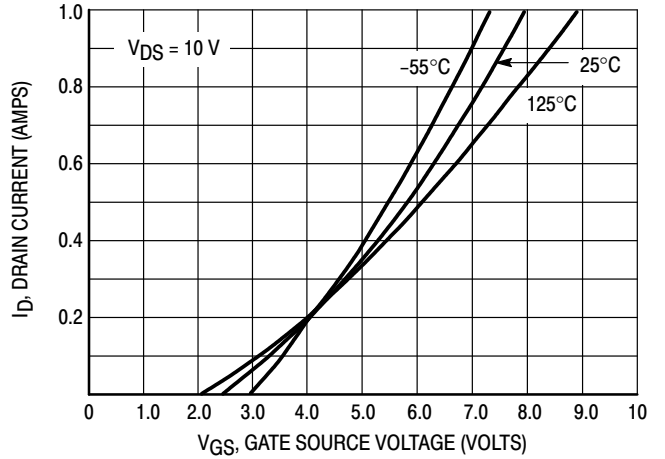


Figure 4. Transfer Characteristics

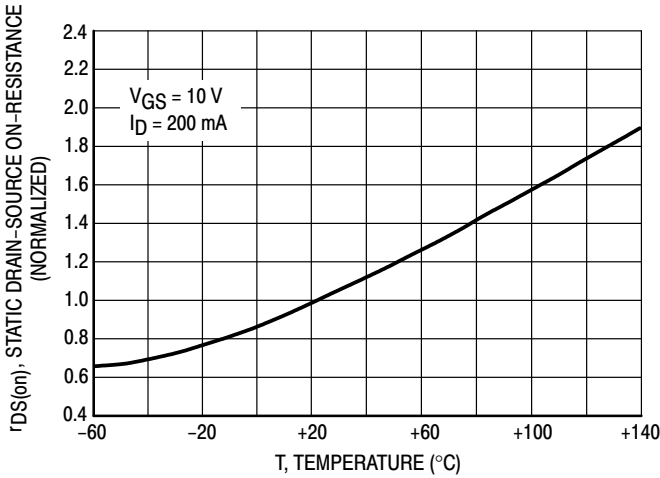


Figure 5. Temperature versus Static Drain-Source On-Resistance

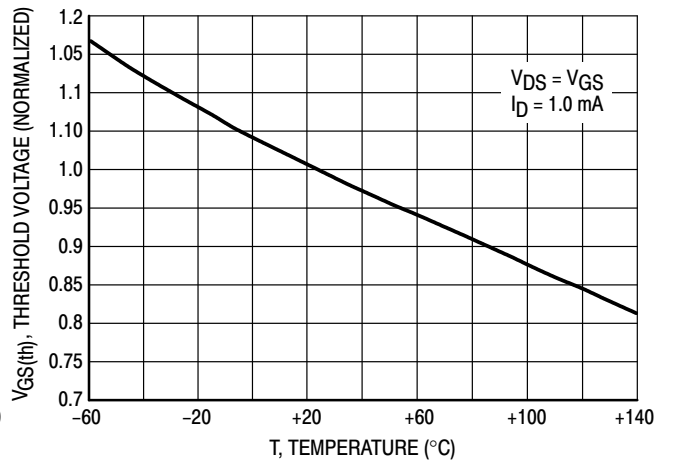
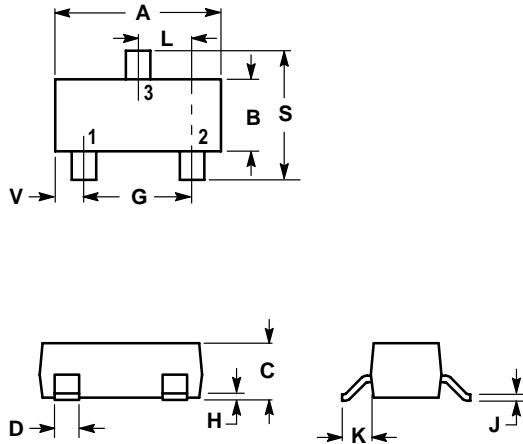


Figure 6. Temperature versus Gate Threshold Voltage

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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

