



**THE DATASHEET OF
MMBF5457LT1**



MMBF5457LT1

Preferred Device

JFET - General Purpose Transistor

N-Channel

Features

- Pb-Free Package is Available

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	25	Vdc
Drain-Gate Voltage	V_{DG}	25	Vdc
Reverse Gate-Source Voltage	$V_{GS(r)}$	-25	Vdc
Gate Current	I_G	10	mAdc

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Total Device Dissipation FR-5 Board (Note 1) ($T_A = 25^\circ\text{C}$ Derate above 25°C)	P_D	225	mW
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	556	$^\circ\text{C/W}$
Junction and Storage Temperature	T_J, T_{stg}	-55 to +150	$^\circ\text{C}$

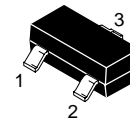
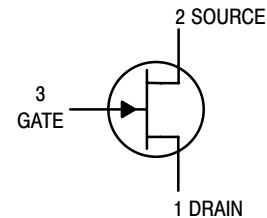
Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

1. FR-5 = $1.0 \times 0.75 \times 0.062$ in.



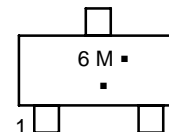
ON Semiconductor®

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SOT-23 (TO-236)
CASE 318
STYLE 10

MARKING DIAGRAM



6 = Specific Device Code

M = Date Code*

■ = Pb-Free Package

(Note: Microdot may be in either location)

*Date Code orientation and/or overbar may vary depending upon manufacturing location.

ORDERING INFORMATION

Device	Package	Shipping†
MMBF5457LT1	SOT-23	3000/Tape & Reel
MMBF5457LT1G	SOT-23 (Pb-Free)	3000/Tape & Reel

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

Preferred devices are recommended choices for future use and best overall value.

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

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Gate-Source Breakdown Voltage ($I_G = 10 \mu\text{Adc}$, $V_{DS} = 0$)	$V_{(BR)GSS}$	-25	-	-	Vdc
Gate Reverse Current ($V_{GS} = 15 \text{Vdc}$, $V_{DS} = 0$) ($V_{GS} = 15 \text{Vdc}$, $V_{DS} = 0$, $T_A = 100^\circ\text{C}$)	I_{GSS}	-	-	-1.0 -200	nAdc
Gate Source Cutoff Voltage ($V_{DS} = 15 \text{Vdc}$, $I_D = 10 \text{nAdc}$)	$V_{GS(off)}$	-0.5	-	-6.0	Vdc
Gate Source Voltage ($V_{DS} = 15 \text{Vdc}$, $I_D = 100 \mu\text{Adc}$)	V_{GS}	-	-2.5	-	Vdc
ON CHARACTERISTICS					
Zero-Gate-Voltage Drain Current (Note 2) ($V_{DS} = 15 \text{Vdc}$, $V_{GS} = 0$)	I_{DSS}	1.0	-	5.0	mAdc
SMALL-SIGNAL CHARACTERISTICS					
Forward Transfer Admittance (Note 2) ($V_{DS} = 15 \text{Vdc}$, $V_{GS} = 0$, $f = 1.0 \text{kHz}$)	$ Y_{fs} $	1000	-	5000	μmhos
Output Common Source Admittance ($V_{DS} = 15 \text{Vdc}$, $V_{GS} = 0$, $f = 1.0 \text{kHz}$)	$ y_{os} $	-	10	50	μmhos
Input Capacitance ($V_{DS} = 15 \text{Vdc}$, $V_{GS} = 0$, $f = 1.0 \text{MHz}$)	C_{iss}	-	4.5	7.0	pF
Reverse Transfer Capacitance ($V_{DS} = 15 \text{Vdc}$, $V_{GS} = 0$, $f = 1.0 \text{MHz}$)	C_{rss}	-	1.5	3.0	pF

2. Pulse Test: Pulse Width $\leq 630 \text{ms}$, Duty Cycle $\leq 10\%$.

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TYPICAL CHARACTERISTICS

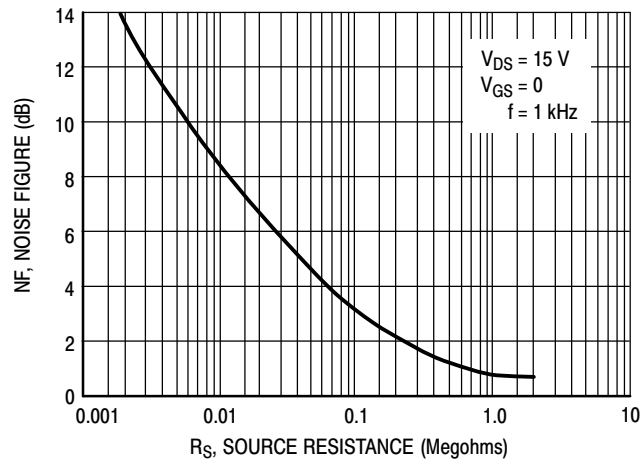


Figure 1. Noise Figure versus Source Resistance

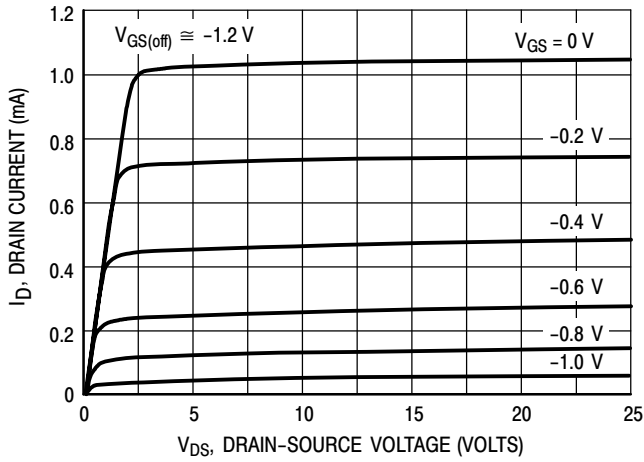


Figure 2. Typical Drain Characteristics

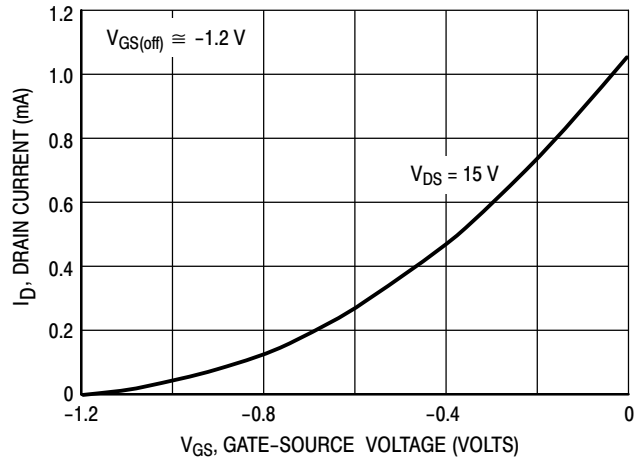


Figure 3. Common Source Transfer Characteristics

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TYPICAL CHARACTERISTICS

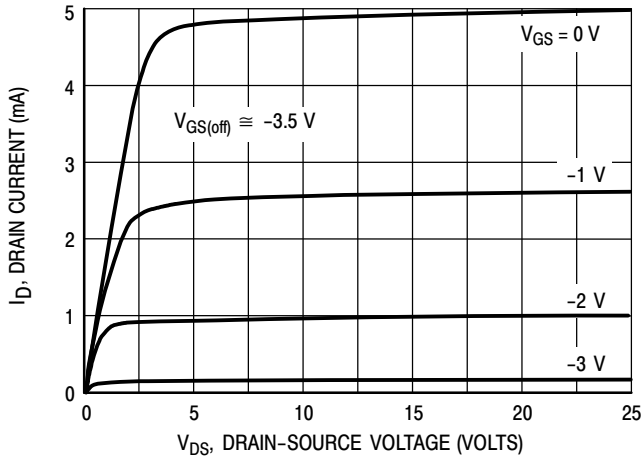


Figure 4. Typical Drain Characteristics

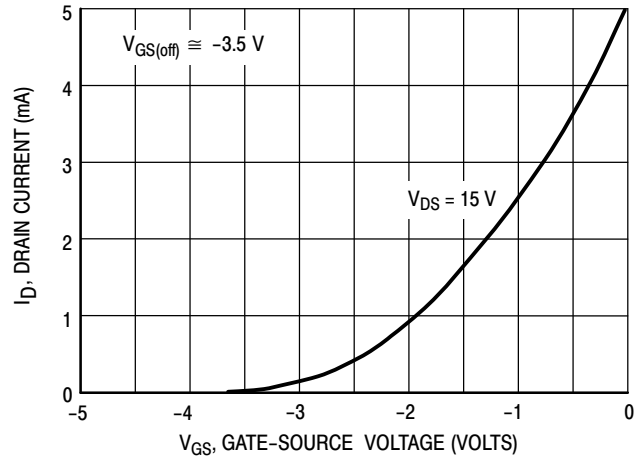


Figure 5. Common Source Transfer Characteristics

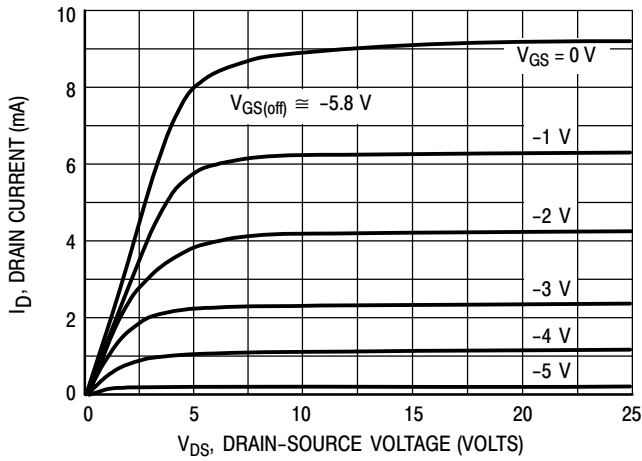


Figure 6. Typical Drain Characteristics

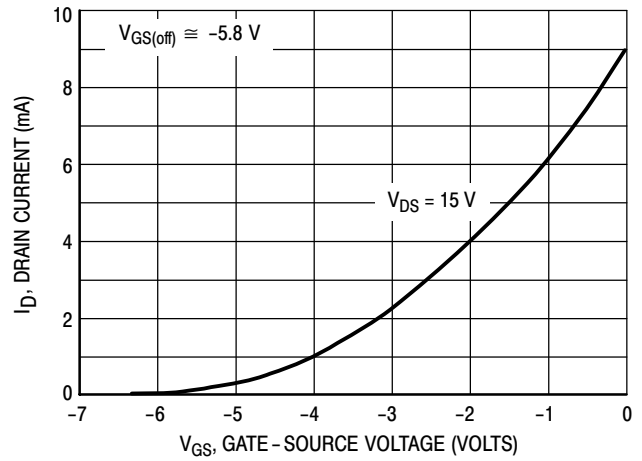


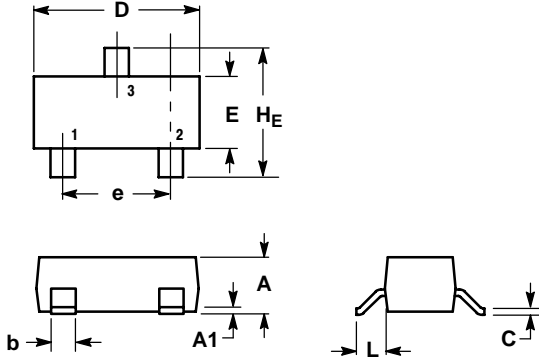
Figure 7. Common Source Transfer Characteristics

Note: Graphical data is presented for dc conditions. Tabular data is given for pulsed conditions (Pulse Width = 630 ms, Duty Cycle = 10%). Under dc conditions, self heating in higher I_{DSS} units reduces I_{DSS} .

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PACKAGE DIMENSIONS

SOT-23 (TO-236)
CASE 318-08
ISSUE AL



NOTES:

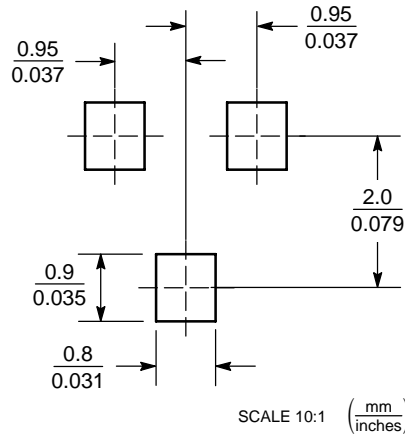
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
4. 318-01 THRU -07 AND -09 OBSOLETE, NEW STANDARD 318-08.

DIM	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.89	1.00	1.11	0.035	0.040	0.044
A1	0.01	0.06	0.10	0.001	0.002	0.004
b	0.37	0.44	0.50	0.015	0.018	0.020
c	0.09	0.13	0.18	0.003	0.005	0.007
D	2.80	2.90	3.04	0.110	0.114	0.120
E	1.20	1.30	1.40	0.047	0.051	0.055
e	1.78	1.90	2.04	0.070	0.075	0.081
L	0.35	0.54	0.69	0.014	0.021	0.029
HE	2.10	2.40	2.64	0.083	0.094	0.104

STYLE 10:

- PIN 1. DRAIN
- SOURCE
- GATE

SOLDERING FOOTPRINT*



*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

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