

# 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 $25^\circ\text{C}$ )	$P_D$	225	mW
		1.8	mW/ $^\circ\text{C}$
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	556	$^\circ\text{C/W}$
Junction and Storage Temperature	$T_J, T_{stg}$	-55 to +150	$^\circ\text{C}$

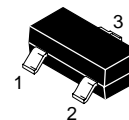
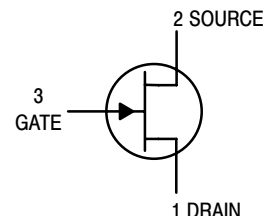
Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur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

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



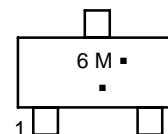
ON Semiconductor®

<http://onsemi.com>



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.

# MMBF5457LT1

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

Characteristic	Symbol	Min	Typ	Max	Unit
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### 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
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### 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	$\mu\text{mhos}$
Output Common Source Admittance ( $V_{DS} = 15\ \text{Vdc}$ , $V_{GS} = 0$ , $f = 1.0\ \text{kHz}$ )	$ y_{os} $	–	10	50	$\mu\text{mhos}$
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  $\leq 10\%$ .

TYPICAL CHARACTERISTICS

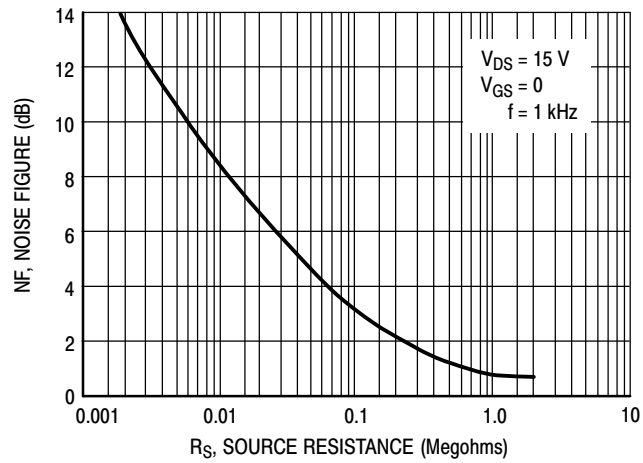


Figure 1. Noise Figure versus Source Resistance

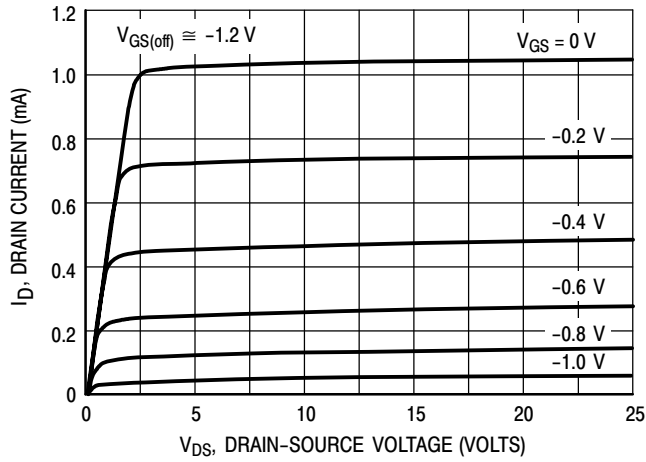


Figure 2. Typical Drain Characteristics

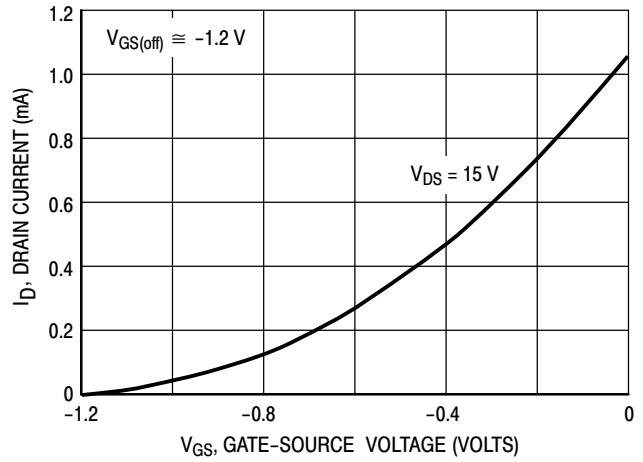


Figure 3. Common Source Transfer Characteristics

## TYPICAL CHARACTERISTICS

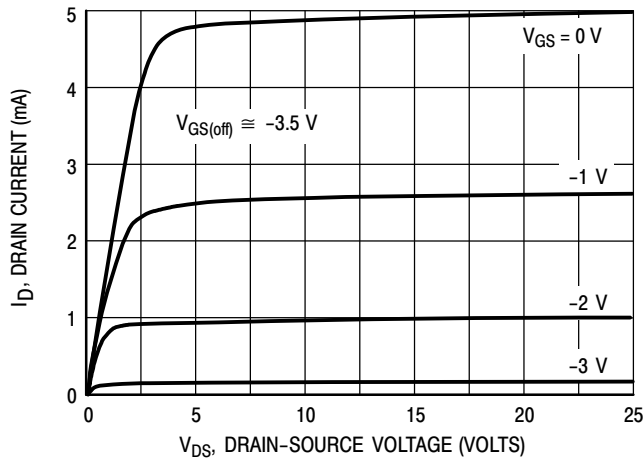


Figure 4. Typical Drain Characteristics

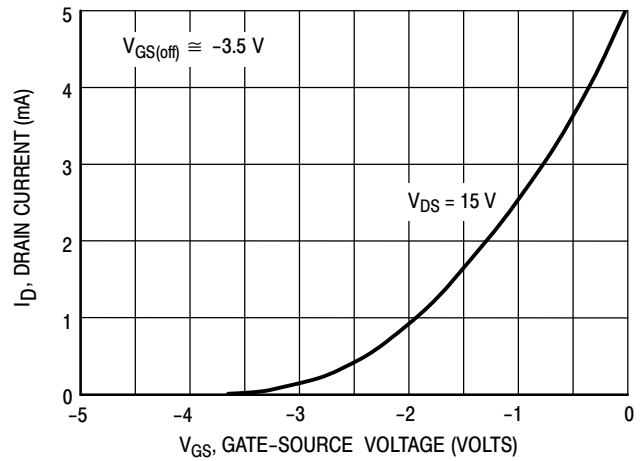


Figure 5. Common Source Transfer Characteristics

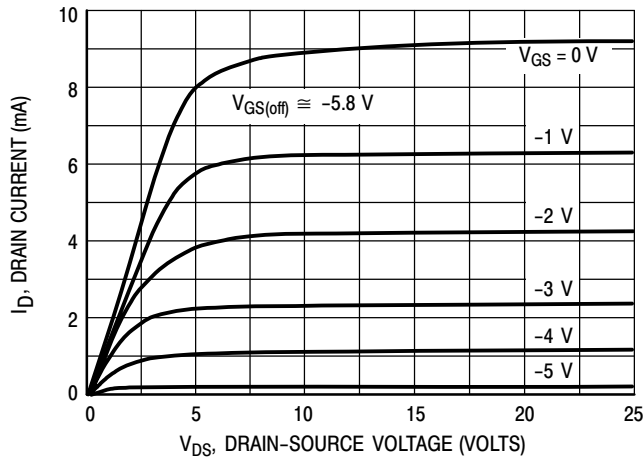


Figure 6. Typical Drain Characteristics

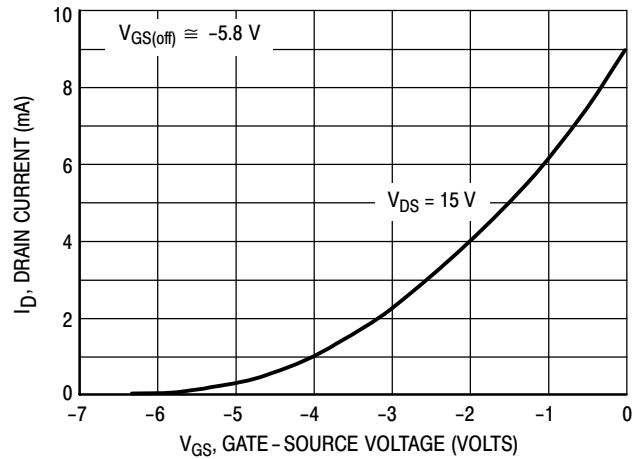


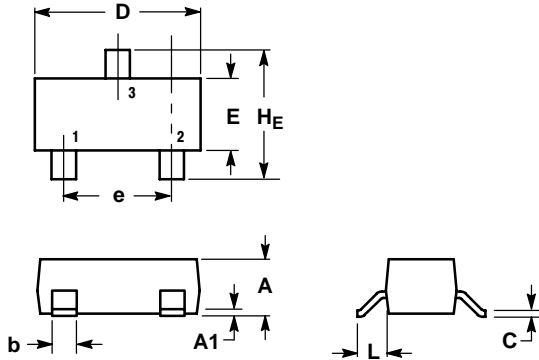
Figure 7. Common Source Transfer Characteristics

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  $I_{DSS}$ .

# MMBF5457LT1

## PACKAGE DIMENSIONS

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



### NOTES:

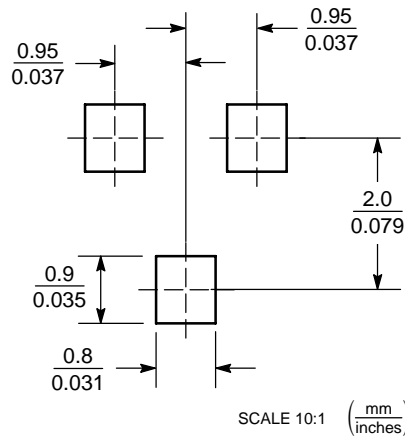
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
4. 318-01 THRU -07 AND -09 OBSOLETE, NEW STANDARD 318-08.

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
H <sub>E</sub>	2.10	2.40	2.64	0.083	0.094	0.104

### STYLE 10:


- PIN 1. DRAIN  
2. SOURCE  
3. 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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