

# MMBFJ177LT1G, SMMBFJ177LT1G

## JFET Chopper P-Channel – Depletion

### Features

- S Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable
- These Devices are Pb-Free, Halogen Free/BFR Free and are RoHS Compliant

### MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Drain-Gate Voltage	$V_{DG}$	-25	Vdc
Gate-Source Voltage	$V_{GS}$	25	Vdc

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

### THERMAL CHARACTERISTICS

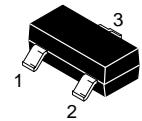
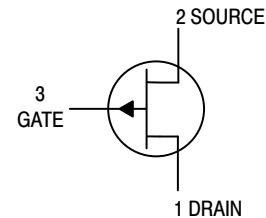
Total Device Dissipation FR-5 Board (Note 1) $T_A = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	225 1.8	mW mW/ $^\circ\text{C}$
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	556	$^\circ\text{C}/\text{W}$
Junction and Storage Temperature	$T_J, T_{stg}$	-55 to +150	$^\circ\text{C}$

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



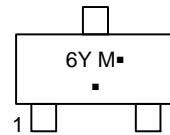
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SOT-23 (TO-236)  
CASE 318-08  
STYLE 10

### MARKING DIAGRAM



6Y = 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 <sup>†</sup>
MMBFJ177LT1G	SOT-23 (Pb-Free)	3000 / Tape & Reel
SMMBFJ177LT1G	SOT-23 (Pb-Free)	3000 / Tape & Reel

<sup>†</sup>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.

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

Characteristic	Symbol	Min	Max	Unit
<b>OFF CHARACTERISTICS</b>				
Gate-Source Breakdown Voltage ( $V_{DS} = 0$ , $I_D = 1.0 \mu\text{Adc}$ )	$V_{(BR)GSS}$	30	—	Vdc
Gate Reverse Current ( $V_{DS} = 0$ Vdc, $V_{GS} = 20$ Vdc)	$I_{GSS}$	—	1.0	nAdc
Gate Source Cutoff Voltage ( $V_{DS} = -15$ Vdc, $I_D = -10$ nAdc)	$V_{GS(\text{off})}$	0.8	2.5	Vdc

## ON CHARACTERISTICS

Zero-Gate-Voltage Drain Current ( $V_{GS} = 0$ , $V_{DS} = -15$ Vdc) (Note 2)	$I_{DSS}$	-1.5	-20	mAdc
Drain Cutoff Current ( $V_{DS} = -15$ Vdc, $V_{GS} = 10$ Vdc)	$I_{D(\text{off})}$	—	-1.0	nAdc
Drain Source On Resistance ( $I_D = -500 \mu\text{Adc}$ )	$r_{DS(\text{on})}$	—	300	$\Omega$
Input Capacitance	$V_{DS} = 0$ , $V_{GS} = 10$ Vdc $f = 1.0$ MHz	$C_{iss}$	—	11 pF
		$C_{rss}$	—	5.5

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

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

## TYPICAL CHARACTERISTICS

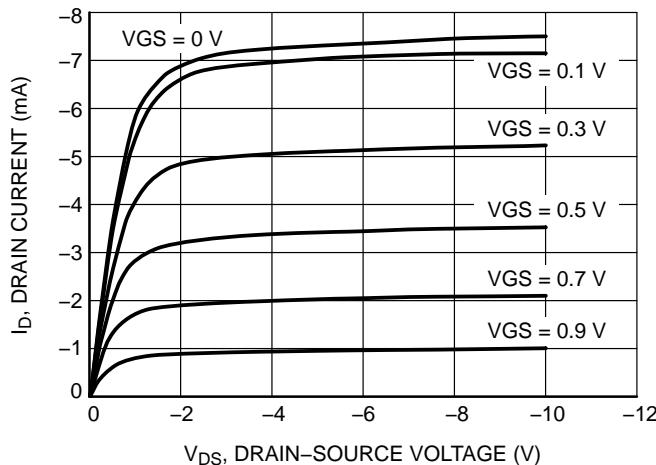


Figure 1. Drain Current vs. Drain-Source Voltage

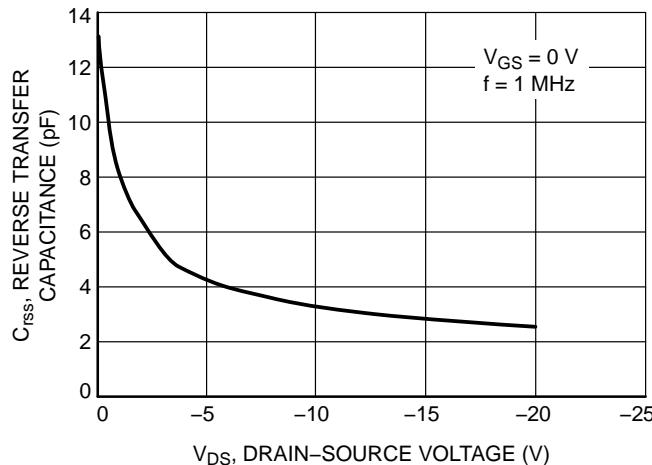


Figure 2. Reverse Transfer Capacitance

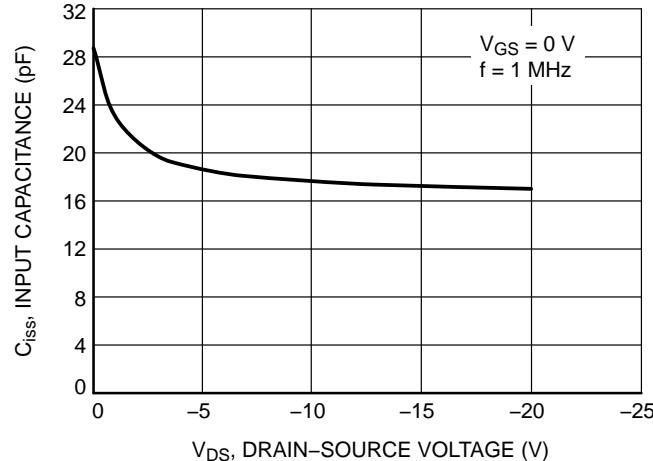
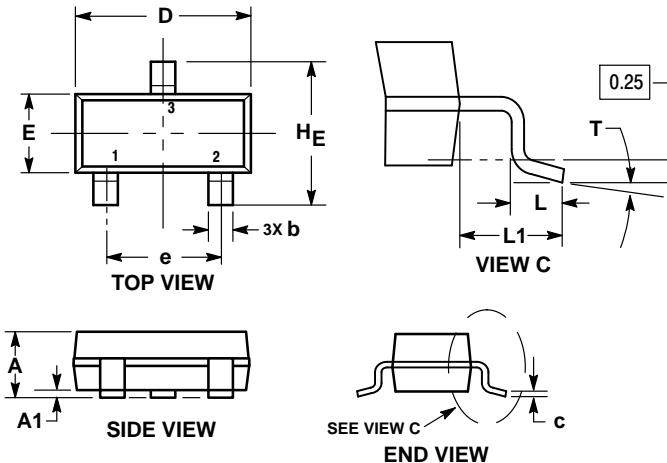


Figure 3. Input Capacitance

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## PACKAGE DIMENSIONS

### SOT-23 (TO-236) CASE 318-08 ISSUE AR



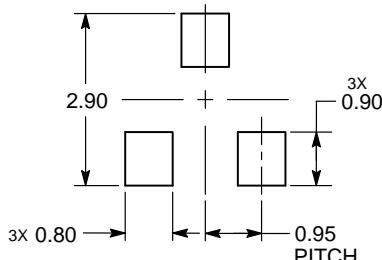
#### NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH.
4. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF THE BASE MATERIAL.
5. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR GATE BURRS.

DIM	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.89	1.00	1.11	0.035	0.039	0.044
A1	0.01	0.06	0.10	0.000	0.002	0.004
b	0.37	0.44	0.50	0.015	0.017	0.020
c	0.08	0.14	0.20	0.003	0.006	0.008
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	0.080
L	0.30	0.43	0.55	0.012	0.017	0.022
L1	0.35	0.54	0.69	0.014	0.021	0.027
H_E	2.10	2.40	2.64	0.083	0.094	0.104
T	0°	—	10°	0°	—	10°

STYLE 10:  
PIN 1. DRAIN  
2. SOURCE  
3. GATE

### RECOMMENDED SOLDERING FOOTPRINT\*



DIMENSIONS: MILLIMETERS

\*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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