

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

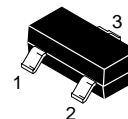
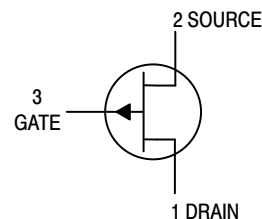
| | | | |
|--|-----------------|-------------|----------------------------|
| Total Device Dissipation FR–5 Board (Note 1) $T_A = 25^\circ\text{C}$ Derate above 25°C | P_D | 225 1.8 | mW mW/ $^\circ\text{C}$ |
| Thermal Resistance, Junction–to–Ambient | $R_{\theta JA}$ | 556 | $^\circ\text{C}/\text{W}$ |
| 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.



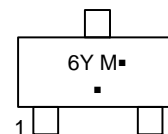
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**SOT-23 (TO-236)
CASE 318-08
STYLE 10**

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† |
|---------------|---------------------|--------------------|
| MMBFJ177LT1G | SOT-23 (Pb-Free) | 3000 / Tape & Reel |
| SMMBFJ177LT1G | 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.

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

| Characteristic | Symbol | Min | Max | Unit |
|----------------|--------|-----|-----|------|
|----------------|--------|-----|-----|------|

OFF CHARACTERISTICS

| | | | | |
|--|---------------|-----|-----|------|
| Gate-Source Breakdown Voltage ($V_{DS} = 0$, $I_D = 1.0 \mu\text{A}$) | $V_{(BR)GSS}$ | 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) | $V_{GS(off)}$ | 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) | $I_{D(off)}$ | - | -1.0 | nAdc | |
| Drain Source On Resistance ($I_D = -500 \mu\text{Adc}$) | $r_{DS(on)}$ | - | 300 | Ω | |
| Input Capacitance | $V_{DS} = 0$, $V_{GS} = 10$ Vdc $f = 1.0$ MHz | C_{iss} | - | 11 | pF |
| Reverse Transfer Capacitance | | 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

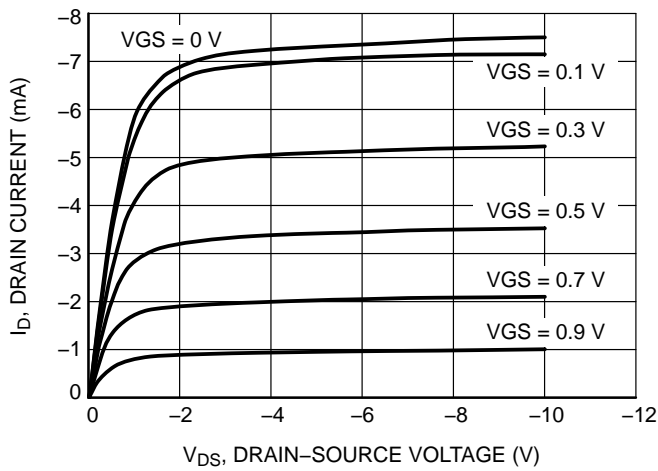


Figure 1. Drain Current vs. Drain-Source Voltage

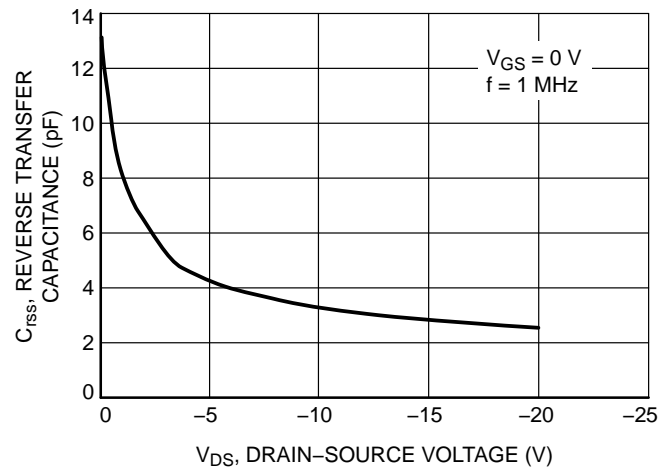


Figure 2. Reverse Transfer Capacitance

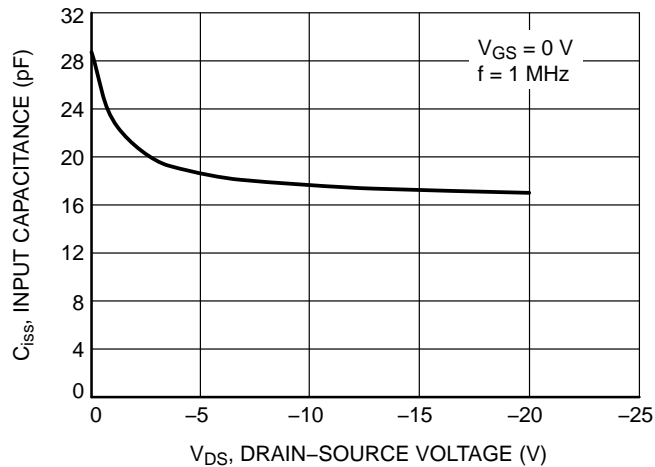
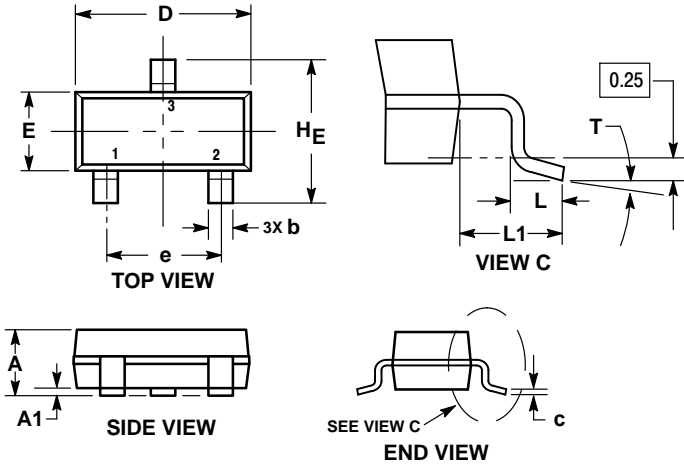


Figure 3. Input Capacitance

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PACKAGE DIMENSIONS

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



NOTES:

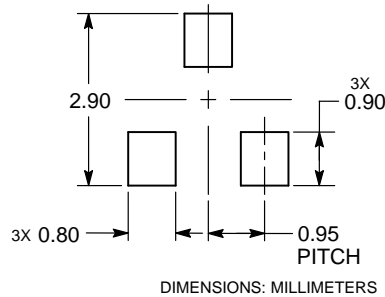
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF THE BASE MATERIAL.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR GATE BURRS.

| 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:

1. DRAIN
2. SOURCE
3. GATE

RECOMMENDED 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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