

# MMBFU310LT1G

## JFET Transistor

### N-Channel

#### Features

- These Devices are Pb-Free, Halogen Free/BFR Free and are RoHS Compliant

#### MAXIMUM RATINGS

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

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

#### 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	mW
		1.8	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	$^\circ\text{C}$

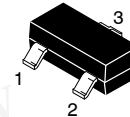
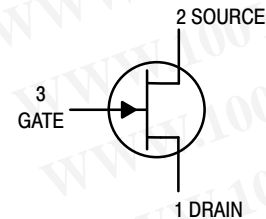
1. FR-5 =  $1.0 \times 0.75 \times 0.062$  in.

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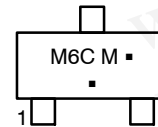
ON Semiconductor®

<http://onsemi.com>



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

#### MARKING DIAGRAM



M6C = 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

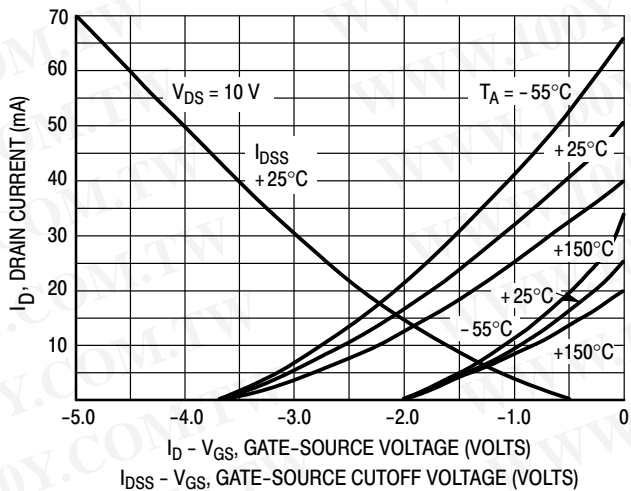
Device	Package	Shipping†
MMBFU310LT1G	SOT-23 (Pb-Free)	3000 Tape & Reel

†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.

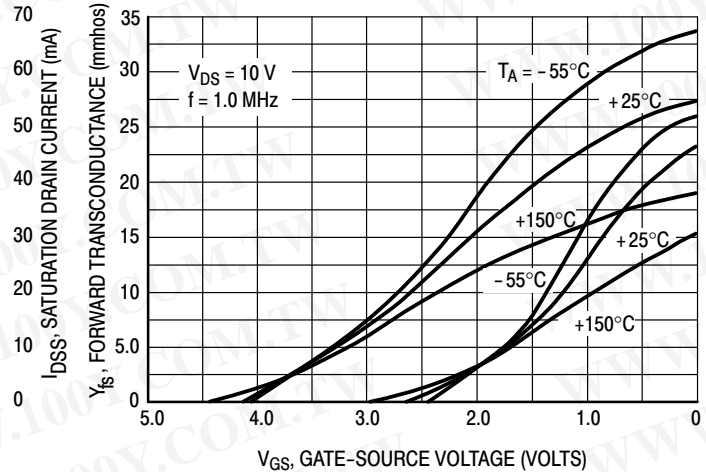
# MMBFU310LT1G

## ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Max	Unit
<b>OFF CHARACTERISTICS</b>				
Gate-Source Breakdown Voltage - (I <sub>G</sub> = -1.0 μAdc, V <sub>DS</sub> = 0)	V <sub>(BR)GSS</sub>	-25	-	Vdc
Gate 1 Leakage Current - (V <sub>GS</sub> = -15 Vdc, V <sub>DS</sub> = 0)	I <sub>G1SS</sub>	-	-150	pA
Gate 2 Leakage Current - (V <sub>GS</sub> = -15 Vdc, V <sub>DS</sub> = 0, T <sub>A</sub> = 125°C)	I <sub>G2SS</sub>	-	-150	nAdc
Gate Source Cutoff Voltage - (V <sub>DS</sub> = 10 Vdc, I <sub>D</sub> = 1.0 nAdc)	V <sub>GS(off)</sub>	-2.5	-6.0	Vdc
<b>ON CHARACTERISTICS</b>				
Zero-Gate-Voltage Drain Current - (V <sub>DS</sub> = 10 Vdc, V <sub>GS</sub> = 0)	I <sub>DSS</sub>	24	60	mAdc
Gate-Source Forward Voltage - (I <sub>G</sub> = 10 mAdc, V <sub>DS</sub> = 0)	V <sub>GS(f)</sub>	-	1.0	Vdc
<b>SMALL-SIGNAL CHARACTERISTICS</b>				
Forward Transfer Admittance - (V <sub>DS</sub> = 10 Vdc, I <sub>D</sub> = 10 mAdc, f = 1.0 kHz)	Y <sub>fs</sub>	10	18	mmhos
Output Admittance - (V <sub>DS</sub> = 10 Vdc, I <sub>D</sub> = 10 mAdc, f = 1.0 kHz)	y <sub>os</sub>	-	250	μmhos
Input Capacitance - (V <sub>GS</sub> = -10 Vdc, V <sub>DS</sub> = 0 Vdc, f = 1.0 MHz)	C <sub>iss</sub>	-	5.0	pF
Reverse Transfer Capacitance - (V <sub>GS</sub> = -10 Vdc, V <sub>DS</sub> = 0 Vdc, f = 1.0 MHz)	C <sub>rss</sub>	-	2.5	pF



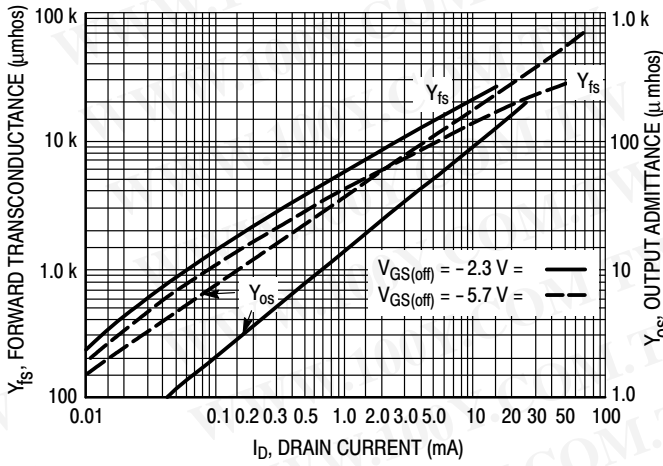
**Figure 1. Drain Current and Transfer Characteristics vs Gate-Source Voltage**



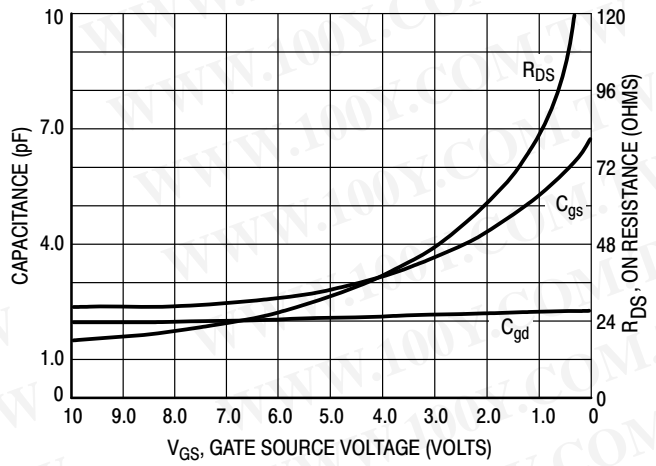
**Figure 2. Forward Transconductance vs Gate-Source Voltage**

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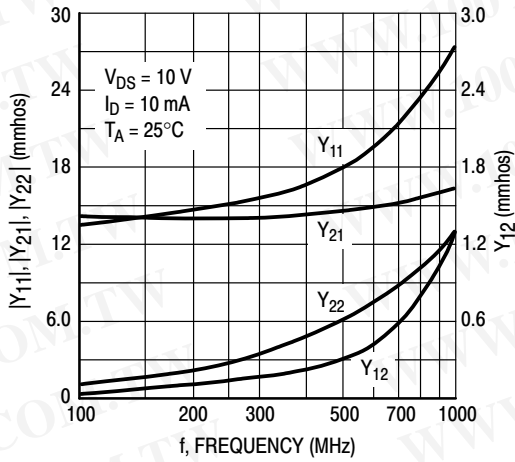
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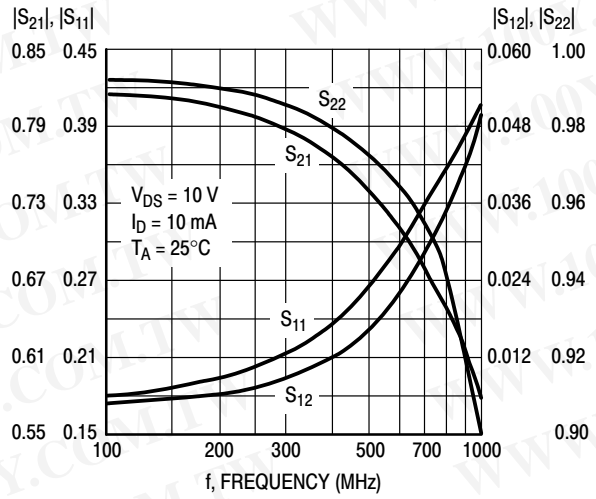
**Figure 3. Common-Source Output Admittance and Forward Transconductance vs Drain Current**



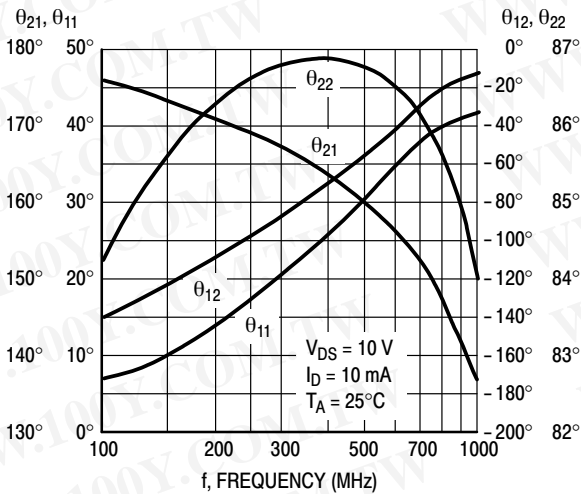
**Figure 4. On Resistance and Junction Capacitance vs Gate-Source Voltage**



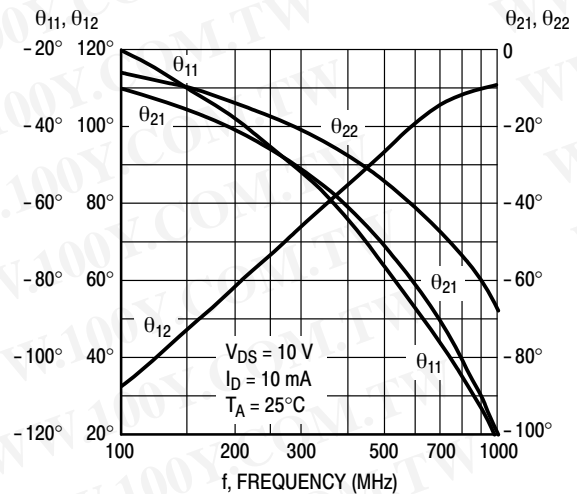
**Figure 5. Common-Gate Y Parameter Magnitude vs Frequency**



**Figure 6. Common-Gate S Parameter Magnitude vs Frequency**



**Figure 7. Common-Gate Y Parameter Phase-Angle vs Frequency**

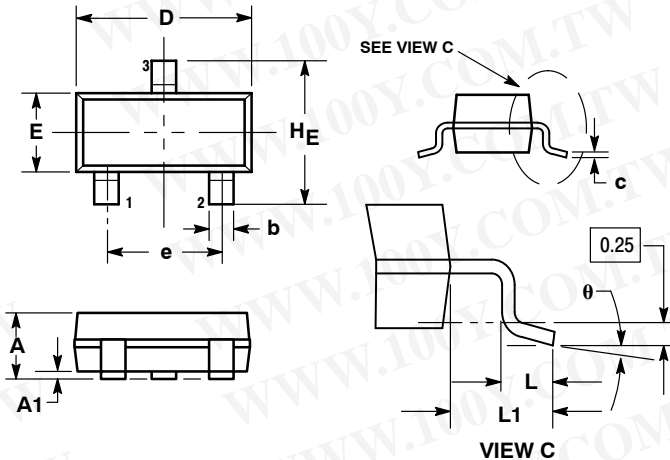


**Figure 8. S Parameter Phase-Angle vs Frequency**

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## PACKAGE DIMENSIONS

SOT-23 (TO-236AB)  
CASE 318-08  
ISSUE AN

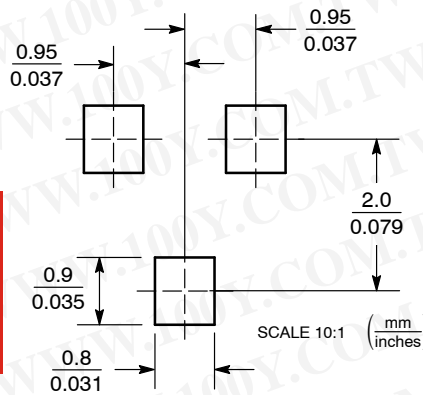


- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
  2. CONTROLLING DIMENSION: INCH.
  3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
  4. 318-01 THRU -07 AND -09 OBSOLETE, NEW STANDARD 318-08.

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	0.10	0.20	0.30	0.004	0.008	0.012
L1	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  
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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