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# 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 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

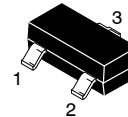
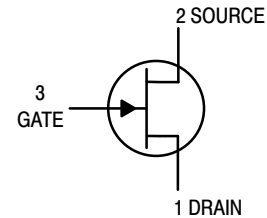
Total Device Dissipation FR-5 Board (Note 1) $T_A = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	225	mW
		1.8	mW/ $^\circ\text{C}$
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	556	$^\circ\text{C}/\text{W}$
Junction and Storage Temperature	$T_J, T_{stg}$	-55 to +150	$^\circ\text{C}$

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



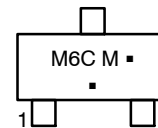
ON Semiconductor®

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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

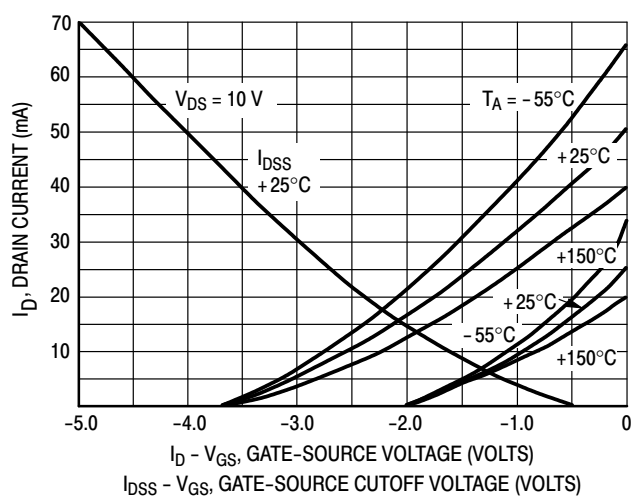
## ON CHARACTERISTICS

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

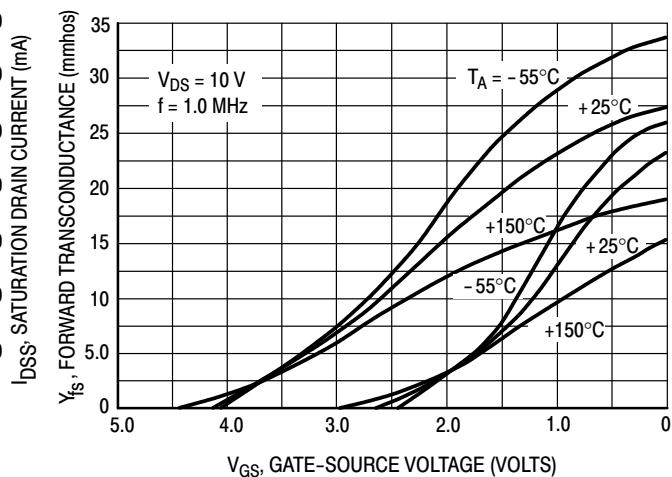
## SMALL-SIGNAL CHARACTERISTICS

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

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.



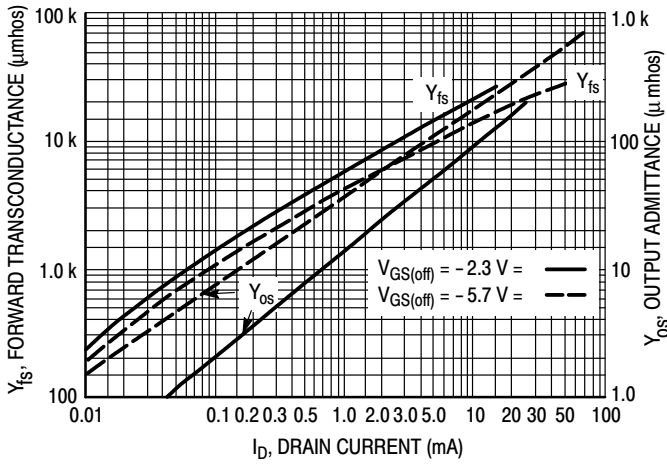
**Figure 1. Drain Current and Transfer Characteristics vs Gate-Source Voltage**



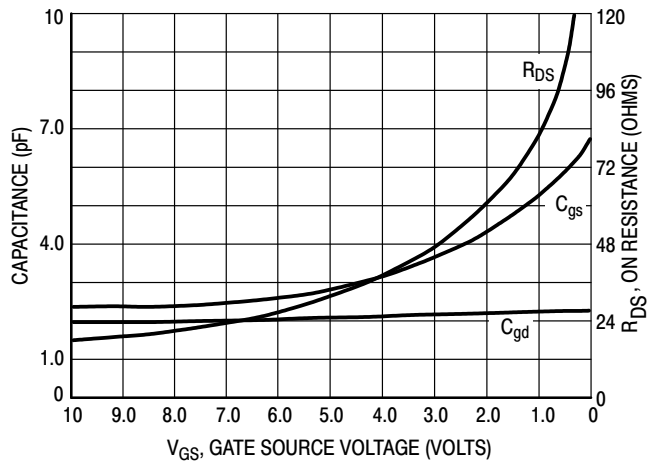
**Figure 2. Forward Transconductance vs Gate-Source Voltage**



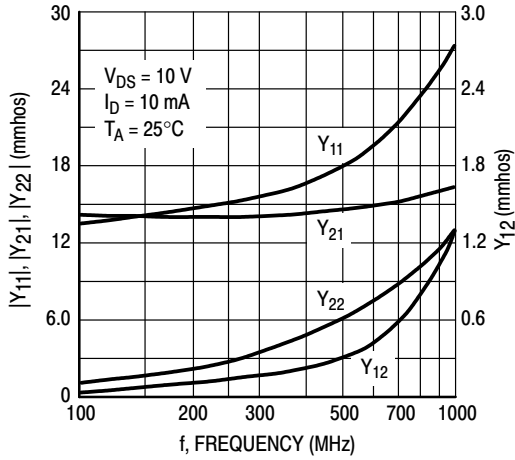
# MMBFU310LT1G



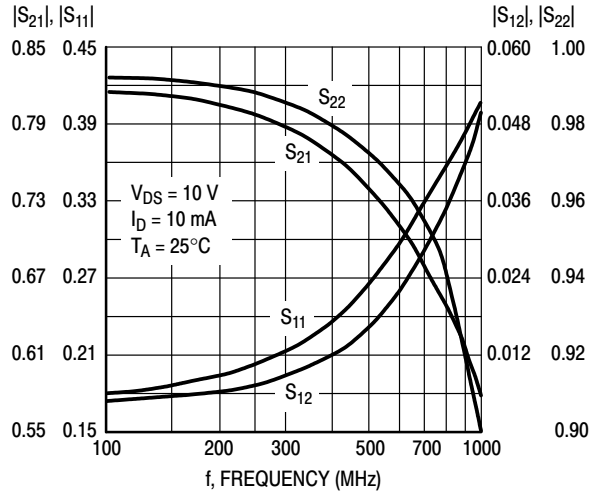
**Figure 3. Common-Source Output Admittance and Forward Transconductance vs Drain Current**



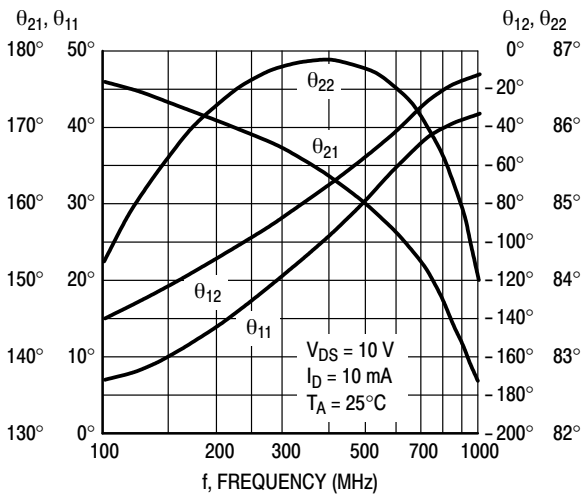
**Figure 4. On Resistance and Junction Capacitance vs Gate-Source Voltage**



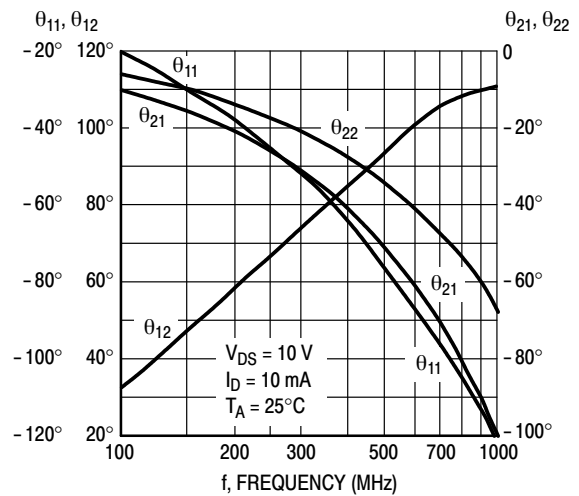
**Figure 5. Common-Gate Y Parameter Magnitude vs Frequency**



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



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

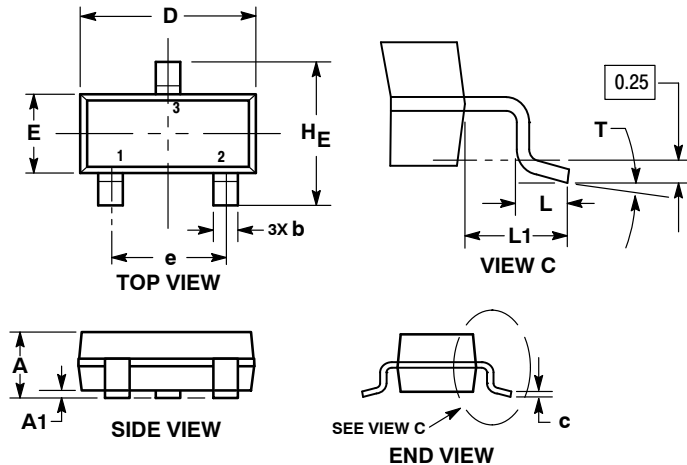


**Figure 8. S Parameter Phase-Angle vs Frequency**

# MMBFU310LT1G

## PACKAGE DIMENSIONS

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



**NOTES:**

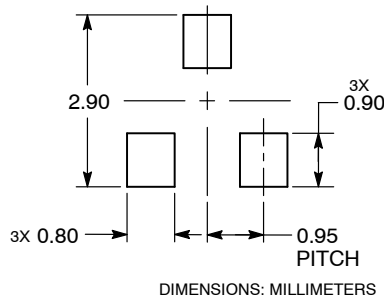
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF THE BASE MATERIAL.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR GATE BURRS.

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
HE	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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