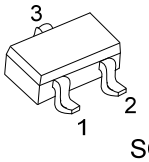
MMBF439X

JFET

N-CHANNEL SWITCH

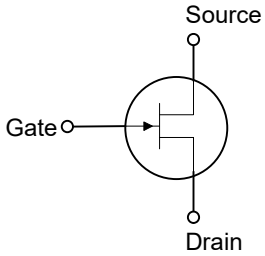


SOT-23
(JEDEC TO-236)

■ DESCRIPTION

The UTC **MMBF439X** is designed for low level analog switching sample and hold circuits and chopper stabilized amplifiers.

■ SYMBOL



■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
MMBF4391L-AE3-R	MMBF4391G-AE3-R	SOT-23	D	S	G	Tape Reel
MMBF4392L-AE3-R	MMBF4392G-AE3-R	SOT-23	D	S	G	Tape Reel
MMBF4392L-AE3-A-R	MMBF4392G-AE3-A-R	SOT-23	S	D	G	Tape Reel
MMBF4393L-AE3-R	MMBF4393G-AE3-R	SOT-23	D	S	G	Tape Reel

Note: Pin Assignment: D: Drain S: Source G: Gate

MMBF4392G-AE3-A-R
(1)Packing Type
(2)Pin Code
(3)Package Type
(4)Green Package

(1) R: Tape Reel
(2) refer to Pin Assignment
(3) AE3: SOT-23
(4) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING

MMBF439X	MMBF439X-A
439□ → Refer to ELECTRICAL CHARACTERISTICS of $V_{GS(OFF)}$	439□□ → Pin Code → Refer to ELECTRICAL CHARACTERISTICS of $V_{GS(OFF)}$

■ ABSOLUTE MAXIMUM RATINGS (T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	RATING	UNIT
Drain-Source Voltage	V_{DS}	30	V
Drain-Gate Voltage	V_{DG}	30	V
Gate-Source Voltage	V_{GSS}	30	V
Forward Gate Current	I_{GF}	50	mA
Power Dissipation	P_D	225	mW
Junction Temperature	T_J	-55 ~ +150	°C
Storage Temperature	T_{STG}	-55 ~ +150	°C

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ THERMAL DATA

PARAMETER	SYMBOL	RATING	UNIT
Junction to Ambient	θ_{JA}	556	°C/W

Note: Device mounted on FR-4 PCB.

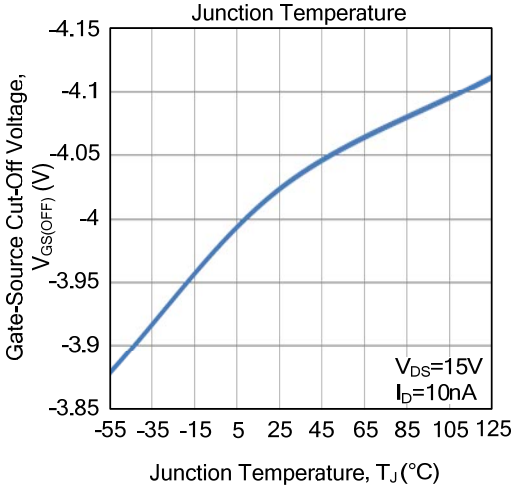
■ ELECTRICAL CHARACTERISTICS (T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS		MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Gate-Source Breakdown Voltage	$V_{(BR)GSS}$	I_G=1.0μA, V_{DS}=0		30			V
Gate Reverse Current (Note)	I_{GSS}	V_{GS}=15V, V_{DS}=0, T_A=25°C				1.0	nA
Gate-Source Cut-Off Voltage	$V_{GS(OFF)}$	V_{DS}=15V, I_D=10nA	MMBF4391	-4.0		-10	V
			MMBF4392	-2.0		-5.0	V
			MMBF4393	-0.5		-3.0	V
Off-State Drain Current	$I_{D(OFF)}$	V_{GS}=-12V, V_{DS}=15V				1.0	nA
ON CHARACTERISTICS							
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=15V, V_{GS}=0	MMBF4391	50		150	mA
			MMBF4392	25		75	mA
			MMBF4393	5		30	mA
Drain-Source On Voltage	$V_{DS(ON)}$	I_D=12mA, V_{GS}=0	MMBF4391			0.4	V
		I_D=6.0mA, V_{GS}=0	MMBF4392			0.4	V
		I_D=3.0mA, V_{GS}=0	MMBF4393			0.4	V
Drain-Source On Resistance	$R_{DS(ON)}$	I_D=1.0mA, V_{GS}=0	MMBF4391			30	Ω
			MMBF4392			60	Ω
			MMBF4393			100	Ω
SMALL-SIGNAL CHARACTERISTICS							
Input Capacitance	C_{ISS}	V_{DS}=15V, V_{GS}=0, f=1.0MHz			27		pF
Reverse Transfer Capacitance	C_{RSS}	V_{DS}=0, V_{GS}=12V, f=1.0MHz			14.5		pF

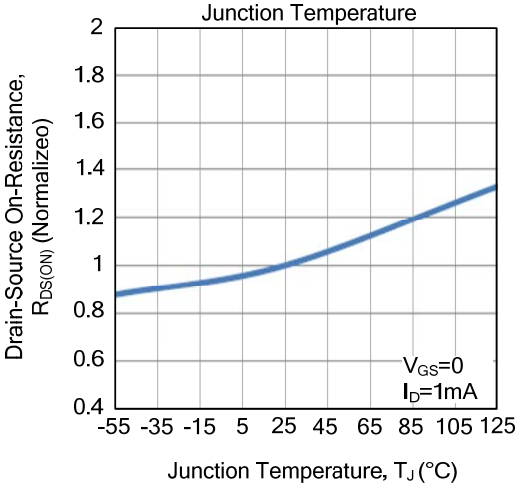
Note: Pulse test: pulse width ≤ 300μs, duty cycle ≤ 2%.

■ TYPICAL CHARACTERISTICS

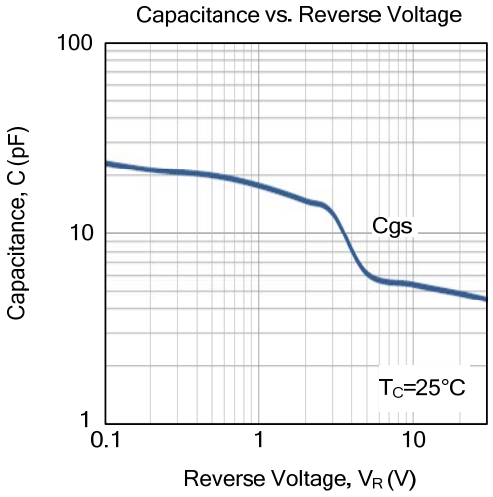
Gate-Source Cut-Off Voltage vs. Junction Temperature



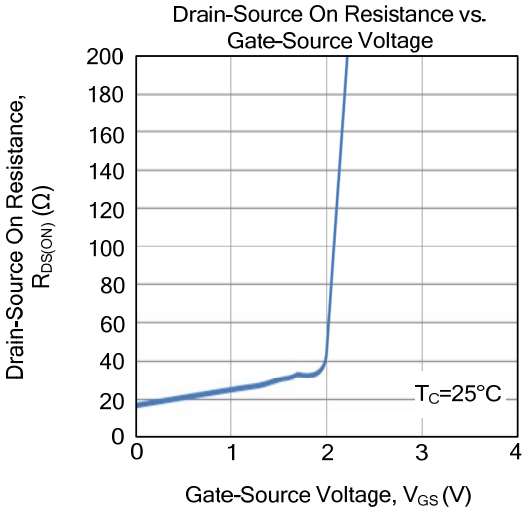
Drain-Source On-Resistance vs. Junction Temperature



Capacitance vs. Reverse Voltage



Drain-Source On Resistance vs. Gate-Source Voltage



Forward Transfer Admittance vs. Drain Current