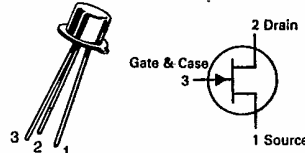


MFE2010 thru MFE2012

CASE 22-03, STYLE 4
TO-18 (TO-206AA)



JFET CHOPPERS

N-CHANNEL — DEPLETION

Refer to J107 for graphs.

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	25	Vdc
Drain-Gate Voltage	V_{DG}	25	Vdc
Gate-Source Voltage	V_{GS}	25	Vdc
Forward Gate Current	I_{GF}	50	mAdc
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	1.8 10	Watt mW/°C
Junction Temperature Range	T_J	-65 to +175	°C
Storage Temperature Range	T_{stg}	-65 to +200	°C

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

Characteristic	Symbol	Min	Max	Unit
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OFF CHARACTERISTICS

Gate-Source Breakdown Voltage ($I_G = 10 \mu\text{Adc}$, $V_{DS} = 0$)	$V_{(BR)GSS}$	25	—	Vdc
Gate Reverse Current ($V_{GS} = 15 \text{ Vdc}$, $V_{DS} = 0$) ($V_{GS} = 15 \text{ Vdc}$, $V_{DS} = 0$, $T_A = 150^\circ\text{C}$)	I_{GSS}	—	3.0 6.0	nAdc μAdc
Drain Cutoff Current ($V_{DS} = 15 \text{ Vdc}$, $V_{GS} = 12 \text{ Vdc}$) ($V_{DS} = 15 \text{ Vdc}$, $V_{GS} = 12 \text{ Vdc}$, $T_A = 150^\circ\text{C}$)	$I_{D(off)}$	—	3.0 6.0	nAdc μAdc

ON CHARACTERISTICS

Zero-Gate-Voltage Drain Current* ($V_{DS} = 20 \text{ Vdc}$, $V_{GS} = 0$)	MFE2010 MFE2011 MFE2012	I_{DSS}^*	15 40 100	— — —	mAdc
Gate-Source Forward Voltage ($I_G = 1.0 \text{ mAdc}$, $V_{DS} = 0$)		$V_{GS(f)}$	—	1.0	Vdc
Gate-Source Voltage ($V_{DS} = 15 \text{ Vdc}$, $I_D = 1.0 \mu\text{Adc}$)	MFE2010 MFE2011 MFE2012	V_{GS}	-0.5 -1.0 -3.0	-10 -10 -10	Vdc
Drain-Source On-Voltage ($I_D = 8.0 \text{ mAdc}$, $V_{GS} = 0$) ($I_D = 15 \text{ mAdc}$, $V_{GS} = 0$) ($I_D = 30 \text{ mAdc}$, $V_{GS} = 0$)	MFE2010 MFE2011 MFE2012	$V_{DS(on)}$	— — —	0.75 0.75 0.75	Vdc
Static Drain-Source On Resistance ($I_D = 1.0 \text{ mAdc}$, $V_{GS} = 0$)	MFE2010 MFE2011 MFE2012	$r_{DS(on)}$	— — —	25 15 10	Ohms

SMALL-SIGNAL CHARACTERISTICS

Static Drain-Source "ON" Resistance ($V_{GS} = 0$, $I_D = 0$, $f = 1.0 \text{ kHz}$)	MFE2010 MFE2011 MFE2012	$r_{ds(on)}$	— — —	25 15 10	Ohms
Input Capacitance ($V_{DS} = 0$, $V_{GS} = 10 \text{ Vdc}$, $f = 1.0 \text{ MHz}$)		C_{iss}	—	50	pF
Reverse Transfer Capacitance ($V_{DS} = 0$, $V_{GS} = 12 \text{ Vdc}$, $f = 1.0 \text{ MHz}$)		C_{rss}	—	20	pF

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

1-3020

Characteristic	Symbol	Min	Max	Unit
SWITCHING CHARACTERISTICS				
Turn-On Delay Time	$t_{d(on)}$	—	10	ns
Rise Time	t_r	—	6.0	ns
Turn-Off Delay Time ($V_{DD} = 15\text{ Vdc}$, $I_D = 8.0\text{ mAdc}$)	$t_{d(off)}$	—	35	ns
($V_{DD} = 15\text{ Vdc}$, $I_D = 15\text{ mAdc}$)			20	
($V_{DD} = 15\text{ Vdc}$, $I_D = 30\text{ mAdc}$)			12	
Fall Time ($V_{DD} = 15\text{ Vdc}$, $I_D = 8.0\text{ mAdc}$)	t_f	—	75	ns
($V_{DD} = 15\text{ Vdc}$, $I_D = 15\text{ mAdc}$)			45	
($V_{DD} = 15\text{ Vdc}$, $I_D = 30\text{ mAdc}$)			25	

*Pulse Test: Pulse Width $\leq 300\ \mu\text{s}$, Duty Cycle $\leq 3.0\%$.