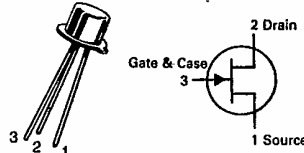


MFE2010 thru MFE2012

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/ $^\circ\text{C}$
Junction Temperature Range	T_J	-65 to +175	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-65 to +200	$^\circ\text{C}$

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

Characteristic	Symbol	Min	Max	Unit
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* ($V_{DS} = 20 \text{Vdc}$, $V_{GS} = 0$)	I_{DSS}^*		15 40 100	mAdc
				MFE2010 MFE2011 MFE2012
Gate-Source Forward Voltage ($I_G = 1.0 \text{mAdc}$, $V_{DS} = 0$)	$V_{GS(f)}$	—	1.0	Vdc
Gate-Source Voltage ($V_{DS} = 15 \text{Vdc}$, $I_D = 1.0 \mu\text{Adc}$)	V_{GS}	-0.5 -1.0 -3.0	-10 -10 -10	Vdc
				MFE2010 MFE2011 MFE2012
Drain-Source On-Voltage ($I_D = 8.0 \text{mAdc}$, $V_{GS} = 0$) ($I_D = 15 \text{mAdc}$, $V_{GS} = 0$) ($I_D = 30 \text{mAdc}$, $V_{GS} = 0$)	$V_{DS(on)}$	—	0.75 0.75 0.75	Vdc
				MFE2010 MFE2011 MFE2012
Static Drain-Source On Resistance ($I_D = 1.0 \text{mAdc}$, $V_{GS} = 0$)	$r_{DS(on)}$	—	25 15 10	Ohms
				MFE2010 MFE2011 MFE2012
SMALL-SIGNAL CHARACTERISTICS				
Static Drain-Source "ON" Resistance ($V_{GS} = 0$, $I_D = 0$, $f = 1.0 \text{kHz}$)	$r_{ds(on)}$	—	25 15 10	Ohms
				MFE2010 MFE2011 MFE2012
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

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

1-3023

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 ($V_{DD} = 15\text{ Vdc}$, $I_D = 8.0\text{ mAdc}$) ($V_{DD} = 15\text{ Vdc}$, $I_D = 15\text{ mAdc}$) ($V_{DD} = 15\text{ Vdc}$, $I_D = 30\text{ mAdc}$)	$t_{d(off)}$	—	35 20 12	ns
Fall Time ($V_{DD} = 15\text{ Vdc}$, $I_D = 8.0\text{ mAdc}$) ($V_{DD} = 15\text{ Vdc}$, $I_D = 15\text{ mAdc}$) ($V_{DD} = 15\text{ Vdc}$, $I_D = 30\text{ mAdc}$)	t_f	—	75 45 25	ns

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