MFE2010 (SILICON)
MFE2011
MFE2012

Silicon N-channel depletion mode (Type A) junction field-effect transistors designed for chopper applications.

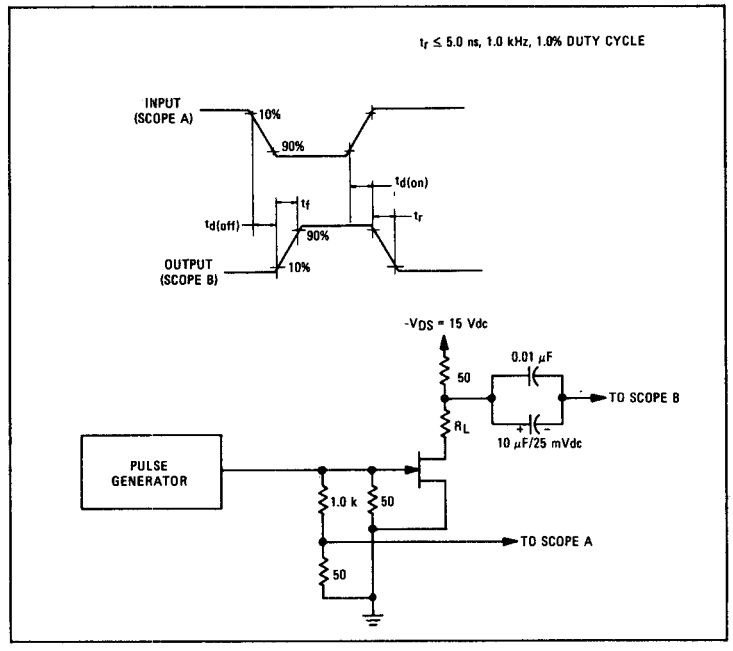
CASE 22
(TO-18)

STYLE 4:
PIN 1. SOURCE
2. DRAIN
3. GATE &CASE

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	$I_{G(f)}$	50	mAdc
Total Device Dissipation @ T_C = 25°C Derate above 25° C	P_D	1.8 10	Watt mW/°C
Operating Junction Temperature Range	T_J	-65 to +175	°C
Storage Temperature Range	T_{stg}	-65 to +200	°C

FIGURE 1 – SWITCHING TIMES TEST CIRCUIT



ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

Characteristic		Symbol	Min	Max	Unit
OFF CHARACTERISTICS					
Gate-Source Breakdown Voltage (I_G = 10 μAdc, V_{DS} = 0)		$V_{(BR)GSS}$	25	-	Vdc
Gate Reverse Current		I_{GSS}			nAdc
(V_{GS} = 15 Vdc, V_{DS} = 0)			-	3.0	
(V_{GS} = 15 Vdc, V_{DS} = 0, T_A = 150°C)			-	6.0	μAdc
Drain Cutoff Current		$I_{D(off)}$			nAdc
(V_{DS} = 15 Vdc, V_{GS} = 12 Vdc)			-	3.0	
(V_{DS} = 15 Vdc, V_{GS} = 12 Vdc, T_A = 150°C)			-	6.0	μAdc
ON CHARACTERISTICS					
Zero-Gate Voltage Drain Current (1)		I_{DSS}			mAdc
(V_{DS} = 20 Vdc, V_{GS} = 0)	MFE2010		15	-	
	MFE2011		40	-	
	MFE2012		100	-	
Gate-Source Voltage		V_{GS}			Vdc
(V_{DS} = 15 Vdc, I_D = 1.0 μAdc)	MFE2010		0.5	10	
	MFE2011		1.0	10	
	MFE2012		3.0	10	
Gate-Source Forward Voltage		VGSF			Vdc
(I_G = 1.0 mAdc, V_{DS} = 0)			-	1.0	
Drain-Source "ON" Voltage		$V_{DS(on)}$			Vdc
(I_D = 8.0 mAdc, V_{GS} = 0)	MFE2010		-	0.75	
(I_D = 15 mAdc, V_{GS} = 0)	MFE2011		-	0.75	
(I_D = 30 mAdc, V_{GS} = 0)	MFE2012		-	0.75	
Static Drain-Source "ON" Resistance		$r_{DS(on)}$			Ohms
(I_D = 1.0 mAdc, V_{GS} = 0)	MFE2010		-	25	
	MFE2011		-	15	
	MFE2012		-	10	
SMALL-SIGNAL CHARACTERISTICS					
Static Drain-Source "ON" Resistance		$r_{ds(on)}$			Ohms
(V_{GS} = 0, I_D = 0, f = 1.0 kHz)	MFE2010		-	25	
	MFE2011		-	15	
	MFE2012		-	10	
Input Capacitance (V_{DS} = 0, V_{GS} = 10 Vdc, f = 1.0 MHz)		C_{iss}	-	50	pF
Reverse Transfer Capacitance (V_{DS} = 0, V_{GS} = 12 Vdc, f = 1.0 MHz)		C_{rss}	-	20	pF
SWITCHING CHARACTERISTICS					
Turn-On Delay Time (See Figure 1)		$t_{d(on)}$	-	10	ns
Rise Time (See Figure 1)		t_r	-	6.0	ns
Turn-Off Delay Time (See Figure 1)		$t_{d(off)}$			ns
(V_{DD} = 15 Vdc, I_D = 8.0 mAdc)	MFE2010		-	35	
(V_{DD} = 15 Vdc, I_D = 15 mAdc)	MFE2011		-	20	
(V_{DD} = 15 Vdc, I_D = 30 mAdc)	MFE2012		-	12	
Fall Time (See Figure 1)		t_f			ns
(V_{DD} = 15 Vdc, I_D = 8.0 mAdc)	MFE2010		-	75	
(V_{DD} = 15 Vdc, I_D = 15 mAdc)	MFE2011		-	45	
(V_{DD} = 15 Vdc, I_D = 30 mAdc)	MFE2012		-	25	

(1) Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 3.0%.