• 2N4860 •

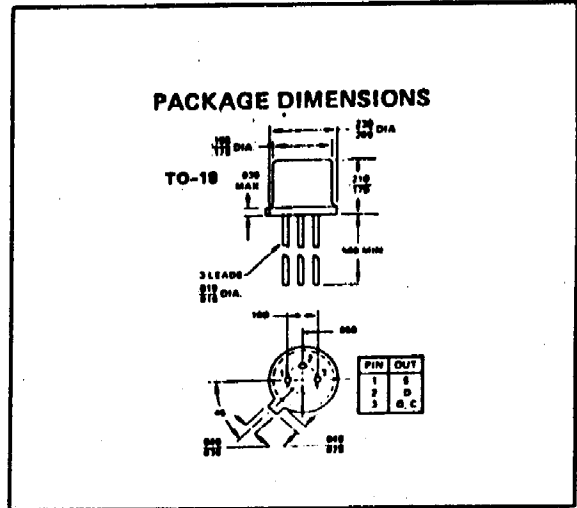## N-CHANNEL JUNCTION FIELD-EFFECT TRANSISTOR

ABSOLUTE MAXIMUM RATINGS
@25°C (unless otherwise noted)

Maximum Temperatures
Storage Temperature — -65°C to +200°C

Operating Junction Temperature — +200°C

Lead Temperature (Soldering, 10 sec time limit) — +300°C

Maximum Power Dissipation
Device Dissipation @ Free Air Temperature — 1.8w
Linear Derating — 10mW/°C

Maximum Voltages & Current

V_{GS} Gate to Source Voltage — -30V

V_{GD} Gate to Drain Voltage — -30 V

I_G Gate Current — 50 mA

PACKAGE DIMENSIONS

TO-18

PIN	OUT
1	S
2	D
3	G, C

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

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Gate Source Breakdown Voltage (I_G = 1.0 µAdc, V_{DS} = 0)	$V_{(BR)GSS}$	-30		Vdc
Gate-Source Cutoff Voltage (V_{DS} = 15 Vdc, I_D = 0.5 nAdc)	$V_{GS(off)}$	-2.0	-6.0	Vdc
Gate Reverse Current (V_{GS} = -15 Vdc, V_{DS} = 0) (V_{GS} = -15 Vdc, V_{DS} = 0, T_A = 150°C)	I_{GSS}		0.25 0.5	nAdc
Drain Cutoff Current (V_{DS} = 15 Vdc, V_{GS} = -10 Vdc) (V_{DS} = 15 Vdc, V_{GS} = -10 Vdc, T_A = 150°C)	$I_{D(off)}$	—	0.25 0.5	nAdc µAdc
ON CHARACTERISTICS				
Zero-Gate Voltage Drain Current (Note 1) (V_{DS} = 15 Vdc, V_{GS} = 0)	I_{DSS}	20	100	mAdc
Drain-Source "ON" Voltage (I_D = 10 mAdc, V_{GS} = 0)	$V_{DS(on)}$		0.5	Vdc
SMALL-SIGNAL CHARACTERISTICS				
Drain-Source "ON" Resistance (V_{GS} = 0, I_D = 0, f = 1.0 kHz)	$r_{ds(on)}$	—	40	Ohms
Input Capacitance (V_{DS} = 0, V_{GS} = -10 Vdc, f = 1.0 MHz)	C_{iss}		18	pF
Reverse Transfer Capacitance (V_{DS} = 0, V_{GS} = -10 Vdc, f = 1.0 MHz)	C_{rss}		8.0	pF

SWITCHING CHARACTERISTICS (See Figure 1) (Note 2)

Turn-On Delay Time			$t_{d(on)}$		6.0	ns
Rise Time	$(V_{DD} = 10$ Vdc, $I_{D(on)} = 10$ mAdc, $V_{GS(on)}$ 0, $V_{GS(off)} = -6.0$ Vdc)		t_r		4.0	ns
Turn-Off Time			t_{off}		50	ns

*Indicates JEDEC Registered Data.

Note 1: Pulse Test: Pulse Width = 100 ms, Duty Cycle ≤ 10%.

Note 2: The $I_{D(on)}$ values are nominal; exact values vary slightly with transistor parameters.

FIGURE 1 — SWITCHING TIMES TEST CIRCUIT

TEST CIRCUIT

VOLTAGE WAVEFORMS

NOTES: a. The input waveforms are supplied by a generator with the following characteristics:
Z_out = 50 ohms, Duty Cycle = 2.0%.
b. Waveforms are monitored on an oscilloscope with the following characteristics:
t_r < 0.75 ns, R_in > 1.0 megohm, C_in = 2.5 pF.