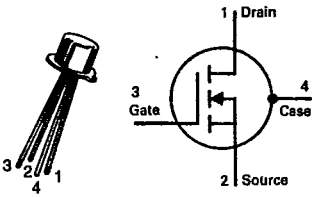
3N169 thru 3N171

CASE 20-03, STYLE 2
TO-72 (TO-206AF)



MOSFETs
SWITCHING

N-CHANNEL — ENHANCEMENT

Refer to 2N4351 for graphs.

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	25	Vdc
Drain-Gate Voltage	V_{DG}	±35	Vdc
Gate-Source Voltage	V_{GS}	±35	Vdc
Drain Current	I_D	30	mAdc
Total Device Dissipation @ T_A = 25°C Derate above 25°C	P_D	300 1.7	mW mW/°C
Total Device Dissipation @ T_C = 25°C Derate above 25°C	P_D	800 4.56	mW mW/°C
Junction Temperature Range	T_J	175	°C
Storage Temperature Range	T_{stg}	−65 to +175	°C

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

Characteristic		Symbol	Min	Max	Unit
OFF CHARACTERISTICS					
Drain-Source Breakdown Voltage (I_D = 10 μAdc, V_{GS} = 0)		$V_{(BR)DSX}$	25	—	Vdc
Zero-Gate-Voltage Drain Current (V_{DS} = 10 Vdc, V_{GS} = 0) (V_{DS} = 10 Vdc, V_{GS} = 0, T_A = 125°C)		I_{DSS}	— —	10 1.0	nAdc μAdc
Gate Reverse Current (V_{GS} = −35 Vdc, V_{DS} = 0) (V_{GS} = −35 Vdc, V_{DS} = 0, T_A = 125°C)		I_{GSS}	— —	10 100	pAdc
ON CHARACTERISTICS					
Gate Threshold Voltage (V_{DS} = 10 Vdc, I_D = 10 μAdc)	3N169 3N170 3N171	$V_{GS(Th)}$	 0.5 1.0 1.5	 1.5 2.0 3.0	Vdc
Drain-Source On-Voltage (I_D = 10 mAdc, V_{GS} = 10 Vdc)		$V_{DS(on)}$	—	2.0	Vdc
On-State Drain Current (V_{GS} = 10 Vdc, V_{DS} = 10 Vdc)		$I_{D(on)}$	10	—	mAdc
SMALL-SIGNAL CHARACTERISTICS					
Drain-Source Resistance (V_{GS} = 10 Vdc, I_D = 0, f = 1.0 kHz)		$r_{ds(on)}$	—	200	Ohms
Forward Transfer Admittance (V_{DS} = 10 Vdc, I_D = 2.0 mAdc, f = 1.0 kHz)		$\|y_{fs}\|$	1000	—	μmhos
Input Capacitance (V_{DS} = 10 Vdc, V_{GS} = 0, f = 1.0 MHz)		C_{iss}	—	5.0	pF
Reverse Transfer Capacitance (V_{DS} = 0, V_{GS} = 0, f = 1.0 MHz)		C_{rss}	—	1.3	pF
Drain-Substrate Capacitance ($V_{D(SUB)}$ = 10 Vdc, f = 1.0 MHz)		$C_{d(sub)}$	—	5.0	pF
SWITCHING CHARACTERISTICS					
Turn-On Delay Time	(V_{DD} = 10 Vdc, $I_{D(on)}$ = 10 mAdc, $V_{GS(on)}$ = 10 Vdc, $V_{GS(off)}$ = 0, R_G' = 50 Ohms) See Figure 1	$t_{d(on)}$	—	3.0	ns
Rise Time		t_r	—	10	ns
Turn-Off Delay Time		$t_{d(off)}$	—	3.0	ns
Fall Time		t_f	—	15	ns

T-35-25

FIGURE 1 — SWITCHING TIME TEST CIRCUIT