2N5556 (SILICON)
thru
2N5558

SILICON N-CHANNEL
JUNCTION FIELD-EFFECT TRANSISTORS

Depletion Mode (Type A) devices designed for low-noise amplifier applications.

- Low Noise Figure – NF = 1.0 dB (Max) @ 100 Hz
- Low Gate Leakage Current – I_{GSS} = 0.1 nAdc (Max)
- Low Input Capacitance – C_{iss} = 6.0 pF (Max)

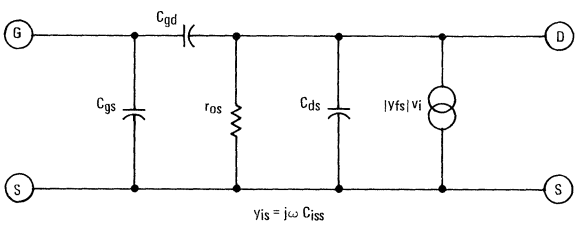
SILICON N-CHANNEL JUNCTION FIELD-EFFECT TRANSISTORS

TYPE A

MAXIMUM RATINGS

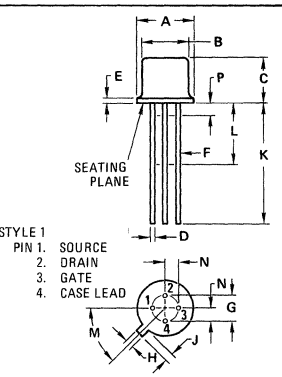
Rating	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	30	Vdc
Drain-Gate Voltage	V_{DG}	30	Vdc
Gate-Source Voltage	V_{GS}	30	Vdc
Forward Gate Current	$I_{G(f)}$	10	mAdc
Total Device Dissipation @ T_A = 25°C Derate above 25°C	P_D	300 2.0	mW mW/°C
Operating Junction Temperature Range	T_J	-65 to +175	°C
Storage Temperature Range	T_{stg}	-65 to +200	°C

FIGURE 1 – EQUIVALENT LOW FREQUENCY CIRCUIT



$Y_{is} = j\omega C_{iss}$
$Y_{os} = 1/r_{oss} + j\omega C_{oss}$
$Y_{fs} = |Y_{fs}|$
$Y_{rs} = -j\omega C_{rss}$

$C_{iss} = C_{gd} + C_{gs}$
$C_{rss} = C_{gd}$
$C_{oss} = C_{gd} + C_{ds}$



DIM	MILLIMETERS MIN	MILLIMETERS MAX	INCHES MIN	INCHES MAX
A	5.31	5.84	0.209	0.230
B	4.52	4.95	0.178	0.195
C	4.32	5.33	0.170	0.210
D	0.41	0.53	0.016	0.021
E	–	0.76	–	0.030
F	0.41	0.48	0.016	0.019
G	2.54 BSC		0.100 BSC	
H	0.91	1.17	0.036	0.046
J	0.71	1.22	0.028	0.048
K	12.70	–	0.500	–
L	6.35	–	0.250	–
M	45° BSC		45° BSC	
N	1.27 BSC		0.050 BSC	
P	–	1.27	–	0.050

ALL JEDEC dimensions and notes apply

CASE 20-03
TO-72

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

Characteristic		Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Gate-Source Breakdown Voltage (I_G = -10 μAdc, V_{DS} = 0)		$V_{(BR)GSS}$	30	-	-	Vdc
Gate-Source Cutoff Voltage (V_{DS} = 15 Vdc, I_D = 1.0 nAdc)	2N5556	$V_{GS(off)}$	0.2	-	4.0	Vdc
	2N5557		0.8	-	5.0	
	2N5558		1.5	-	6.0	
Gate Reverse Current (V_{GS} = -15 Vdc, V_{DS} = 0)		I_{GSS}	-	-	-0.1	nAdc
(V_{GS} = -15 Vdc, V_{DS} = 0, T_A = 150°C)			-	-	-100	
ON CHARACTERISTICS						
Zero-Gate Voltage Drain Current [1] (V_{DS} = 15 Vdc, V_{GS} = 0)	2N5556	I_{DSS}	0.5	-	2.5	mAdc
	2N5557		2.0	-	5.0	
	2N5558		4.0		10	
DYNAMIC CHARACTERISTICS						
Forward Transadmittance [1] (V_{DS} = 15 Vdc, V_{GS} = 0, f = 1.0 kHz)		$\|y_{fs}\|$	1500	3500	6500	μmhos
Output Admittance [1] (V_{DS} = 15 Vdc, V_{GS} = 0, f = 1.0 kHz)		$\|y_{os}\|$	-	-	20	μmhos
Input Capacitance (V_{DS} = 15 Vdc, V_{GS} = 0, f = 1.0 MHz)		C_{iss}	-	4.5	6.0	pF
Reverse Transfer Capacitance (V_{DS} = 15 Vdc, V_{GS} = 0, f = 1.0 MHz)		C_{rss}	-	1.2	3.0	pF
Noise Figure (V_{DS} = 15 Vdc, V_{GS} = 0, R_S = 500 k ohms, f = 10 Hz, BW = 1.0 Hz)		NF	-	-	1.0	dB
(V_{DS} = 15 Vdc, V_{GS} = 0, R_S = 100 k ohms, f = 100 Hz, BW = 1.0 Hz)			-	-	1.0	
Equivalent Input Noise Voltage (V_{DS} = 15 Vdc, V_{GS} = 0, f = 10 Hz, BW = 1.0 Hz)		e_n	-	20	35	$nV/\sqrt{Hz}$
(V_{DS} = 15 Vdc, V_{GS} = 0, f = 100 Hz, BW = 1.0 Hz)			-	10	20	

[1] Pulse Test: Pulse Width = 630 ms, Duty Cycle = 10%.