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NTE454

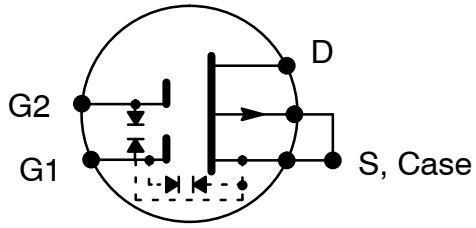
MOSFET, N–Ch, Dual Gate, TV UHF/RF Amp, Gate Protected TO72 Type Package

Description:

The NTE454 is a depletion mode dual gate MOSFET transistor designed for VHF amplifier and mixer applications.

Features:

- Low Reverse Transfer Capacitance – C_{rss} = 0.03pf (Max)
- High Forward Transfer Admittance – $|y_{fe}|$ = 0–20 mmhos
- Diode Protected Gates



Absolute Maximum Ratings:

Drain Source Voltage, V_{DSX} 20Vdc
Drain–Gate Voltage, V_{DG1}, V_{DG2} 30Vdc
Gate Current, I_{G1}, I_{G2} . . . . . ±10mAdc
Drain Current–Continuous, I_D 60mAdc
Total Power Dissipation (T_A = +25°C), P_D 360mW
Derate above 25°C . . . . . 2.4mW/°C
Total Power Dissipation (T_C = +25°C), P_D 1.2Watt
Derate above 25°C . . . . . 8.0mW/°C
Storage Channel Temperature Range, T_{stg} . . . . . –65 to +200°C
Junction Temperature Range, T_J . . . . . –65 to +175°C
Lead Temperature, 1/16” from Seated Surface for 10 Seconds, T_L . . . . . +300°C

Electrical Characteristics: (T_A = 25°C unless otherwise noted)

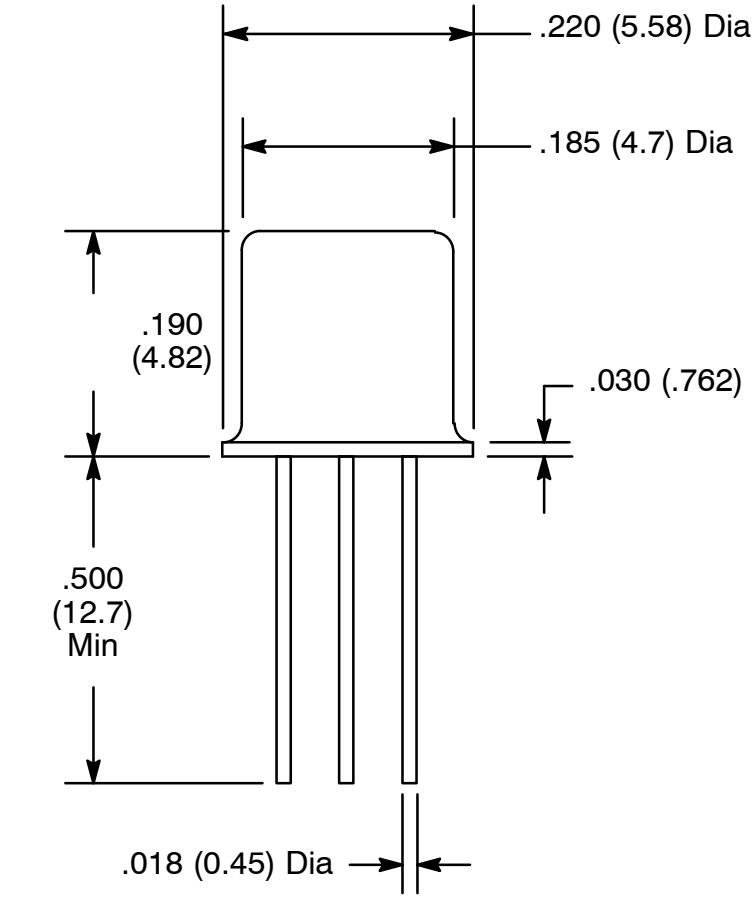
Characteristics	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Drain−Source Breakdown Voltage	$V_{(BR)DSX}$	I_D = 10≤Adc, V_5 = 0, V_{GIS} = V_{G25} = 5.0Vdc	20	–	–	Vdc
Gate 1= Source Breakdown Voltage (Note 1)	$V_{(BR)G1SO}$	I_{G1} = ±10mAdc, V_{GIS} = V_{DS} = 0	±6.0	±12	±30	Vdc
Gate 2−Source Breakdown Voltage (Note 1)	$V_{(BR)G2SO}$	I_{G2} = ±10mAdc, V_{G15} = V_{D5} = 0	±5.0	±12	±30	Vdc
Gate 1 to Source Cutoff Voltage	$V_{GIS(off)}$	V_{DS} = 15Vdc, V_{G2S} = 4.0Vdc, I_D = 20≤Adc	−0.5	−1.5	−5.0	Vdc
Gate 2 to Source Cutoff Voltage	$V_{G2S(off)}$	V_{DS} = 15Vdc, V_{G15} = 0, I_D = 20≤Adc	−0.2	−1.4	−5.0	Vdc
Gate 1 Leakage Current	I_{G1SS}	V_{GIS} = ±5.0Vdc, V_{G2S} = V_{DS} = 0	–	±0.04	±10	nAdc
		V_{G2S} = −5.0Vdc, V_{G2S} = V_{DS} = 0, T_A = 150°C	–	–	−10	≤Adc
Gate 2 Leakage Current	I_{G2SS}	V_{G2S} = ±5.0Vdc, V_{GIS} = V_{DS} = 0	–	±0.05	±10	nAdc
		V_{G2S} = −5.0Vdc, V_{GIS} = V_{DS} = 0, T_A = 150°C	–	–	−10	≤Adc
ON CHARACTERISTICS						
Zero−Gate Voltage Drain Current (Note 2)	I_{DSS}	V_{DS} = 15Vdc, V_{GIS} = 0, V_{G25} = 4.0Vdc	6.0	13	30	mAdc
SMALL−SIGNAL CHARACTERISTICS						
Forward Transfer Admittance (Note 3)	$\|y_{fe}\|$	V_{DS} = 15Vdc, V_{G2S} = 4.0Vdc, V_{GIS} = 0, f = 1.0kH_Z	8.0	12.8	20	mmhos
Input Capacitance	C_{iss}	V_{DS} = 15Vdc, V_{G2S} = 4.0Vdc, I_D = I_{DSS}, f = 1.0MH_Z	–	3.3	–	pF
Output Capacitance	C_{oss}	V_{DS} = 15Vdc, V_{G2S} = 4.0Vdc, I_D = I_{DSS}, f = 1.0MH_Z	–	1.7	–	pF
Reverse Transfer Capacitance	C_{rss}	V_{DS} = 15Vdc, V_{G2S} = 4.0Vdc, I_D = 10mAdc, f = 1.0MH_Z	0.005	0.014	0.03	pF
FUNCTIONAL CHARACTERISTICS						
Noise Figure	NF	V_{DD} = 18Vdc, V_{GG} = 7.0Vdc, f = 200MH_Z	–	1.8	4.5	dB
Common Source Power Gain	G_{ps}	V_{DD} = 18Vdc, V_{GG} = 7.0Vdc, f = 200MH_Z	15	20	25	dB
Bandwidth	BW	V_{DD} = 18Vdc, V_{GG} = 7.0Vdc, f = 200MH_Z	5.0	–	9.0	MH_Z
Gain Control Gate Supply Voltage (Note 4)	$V_{GG(GC)}$	V_{DD} = 18Vdc, ±G_{ps} = −30dB, f = 200MH_Z	0	−1.0	−3.0	Vdc

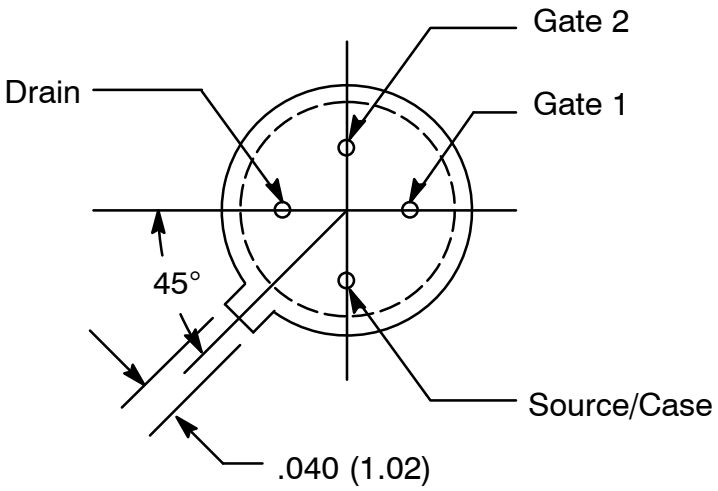
Note 1. All gate breakdown voltages are measured while the device is conducting rated gate current. This ensures that the gate−voltage limiting network is functioning properly.

Note 2. Pulse Test: Pulse Width = 300≤s, Duty Cycle ≤ 2.0%.

Note 3. This parameter must be measured with bias voltages supplied for less than 6 seconds to avoid overheating.

Note 4. ±G_{ps} is defined as the change in G_{pe} from the values at V_{GG} = 7.0V power gain conversion.


.220 (5.58) Dia
.185 (4.7) Dia
.190
(4.82)
.030 (.762)
.500
(12.7)
Min
.018 (0.45) Dia


Gate 2
Drain
Gate 1
45°
Source/Case
.040 (1.02)

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