DIGITRON™ Semiconductors

High-reliability discrete products
and engineering services since 1977

2N4856-2N4861

N CHANNEL JFETS

FEATURES

- Available as "HR" (high reliability) screened per MIL-PRF-19500, JANTX level. Add "HR" suffix to base part number.
- Available as non-RoHS (Sn/Pb plating), standard, and as RoHS by adding "-PBF" suffix.

MAXIMUM RATINGS

Parameters	Symbol	2N4856, 2N4857, 2N4858	2N4859, 2N4860, 2N4861	Unit
Gate-source voltage	V_{GS}	-40	-30	V
Drain-source voltage	V_{DS}	40	30	V
Drain-gate voltage	V_{DG}	40	30	V
Gate current	I_G	50		mA
Power dissipation $T_A = 25°C^{(1)}$ $T_C = 25°C^{(2)}$	P_T	0.36 1.8		W
Operating and storage temperature range	T_J, T_{stg}	-65 to +200		°C

1. Derate linearly 2.06 mW/°C for $T_A > 25°C$.
2. Derate linearly 10.3 mW/°C for $T_C > 25°C$

ELECTRICAL CHARACTERISTICS ($T_C = 25°C$ unless otherwise noted)

Parameters		Symbol	Min	Max	Unit
Gate-source breakdown voltage (VDS = 0, IG = 1.0µAdc)	2N4856, 2N4857, 2N4858 2N4859, 2N4860, 2N4861	$V_{(BR)GSS}$	-40 -30		Vdc
Gate-source "off" voltage (VDS = 15Vdc, ID = 0.5ŋAdc)	2N4856, 2N4859 2N4857, 2N4860 2N4858, 2N4861	$V_{GS(off)}$	-4.0 -2.0 -0.8	-10 -6.0 -4.0	Vdc
Gate-reverse current (VDS = 0, VGS = -20Vdc) (VDS = 0, VGS = -15Vdc)	 2N4856, 2N4857, 2N4858 2N4859, 2N4860, 2N4861	I_{GSS}		 -0.25 -0.25	ŋA
Drain current (VGS = -10Vdc, VDS = 15 Vdc)		$I_{D(off)}$		0.25	ŋA
Drain current (VGS = 0, VDS = 15Vdc)	2N4856, 2N4859 2N4857, 2N4860 2N4858, 2N4861	I_{DSS}	50 20 8.0	175 100 80	mA
Static drain – source "on" state resistance (VGS = 0, ID = 1.0mAdc)	2N4856, 2N4859 2N4857, 2N4860 2N4858, 2N4861	$r_{ds(on)}$		25 40 60	Ω
Drain source "on" state voltage (VGS = 0, ID = 20mAdc) (VGS = 0, ID = 10mAdc) (VGS = 0, ID = 5.0mAdc)	 2N4856, 2N4859 2N4857, 2N4860 2N4858, 2N4861	$V_{DS(on)}$		 0.75 0.50 0.50	Vdc
Small signal, common source reverse transfer capacitance (VGS = -10Vdc, VDS = 0, f = 1.0MHz) (C1 = 0.1µF, L1 = L2 ≥ 500µH)		C_{rss}		8.0	pF

DIGITRON™ Semiconductors

High-reliability discrete products
and engineering services since 1977

2N4856-2N4861

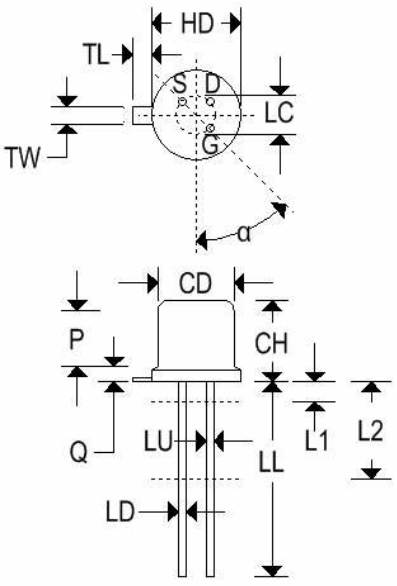
N CHANNEL JFETS

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

Parameters		Symbol	Min	Max	Unit
Small signal, common source short circuit input capacitance (VGS = -10Vdc, VDS = 0, f = 1.0MHz) (C1 = 0.1µf, C2 = 20.1m) (FL1 = L2 ≥ 500µH)		C_{iss}		18	pF
Turn-on delay time	2N4856, 2N4859 2N4857, 2N4860 2N4858, 2N4861	$^{t}d_{on}$		6 6 10	ŋs
Rise time	2N4856, 2N4859 2N4857, 2N4860 2N4858, 2N4861	tr		3 4 10	ŋs
Turn-off delay time	2N4856, 2N4859 2N4857, 2N4860 2N4858, 2N4861	$^{t}d_{off}$		25 50 100	ŋs

MECHANICAL CHARACTERISTICS

Case	TO-18
Marking	Alpha-numeric
Pin out	See below
	Gate is connected to case



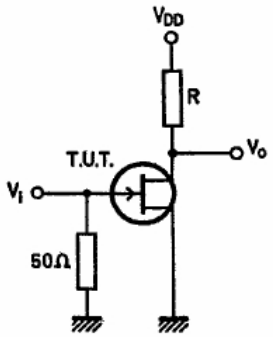
TO-18				
Dim	**Inches**		**Millimeters**	
	Min	**Max**	**Min**	**Max**
CD	0.178	0.195	4.520	4.950
CH	0.170	0.210	4.320	5.330
HD	0.209	0.230	5.310	5.840
LC	0.100 TP		2.540 TP	
LD	0.016	0.021	0.410	0.530
LL	0.500	0.750	12.700	19.050
LU	0.016	0.019	0.410	0.480
L1	-	0.050	-	1.270
L2	0.250	-	6.350	-
P	0.100	-	2.540	-
Q	-	0.040	-	1.020
TL	0.028	0.048	0.710	1.220
TW	0.036	0.046	0.910	1.170
r	-	0.010	-	0.025
α	45°TP		45°TP	

DIGITRON™ Semiconductors

High-reliability discrete products
and engineering services since 1977

2N4856-2N4861

N CHANNEL JFETS

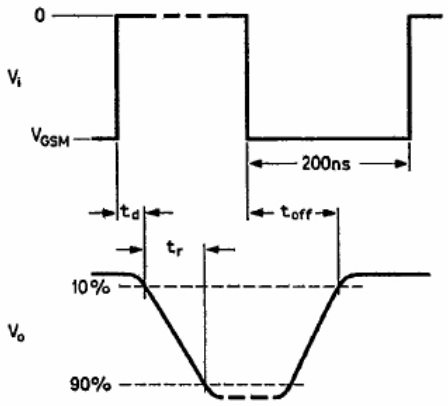


Switching times test circuit.

	2N4856 2N4859	2N4857 2N4860	2N4858 2N4861	
R =	464	953	1910	Ω

Pulse generator:

$t_r \leq$ 1 ns
$t_f \leq$ 1 ns
δ = 0,02
Z_o = 50 Ω



Input and output waveforms.

Oscilloscope:

$t_r \leq$ 0,75 ns
$R_i \geq$ 1 MΩ
$C_i \leq$ 2,5 pF