

3875081 G E SOLID STATE

01E 11056 D



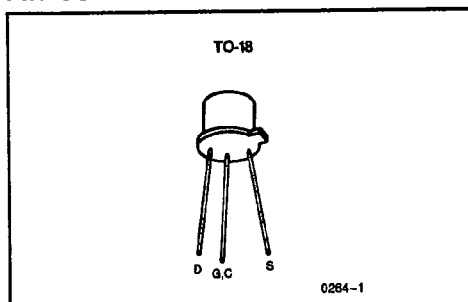
# U304-U306

## P-Channel JFET Switch

### FEATURES

- Low ON Resistance
- $I_{D(off)} < 500\text{pA}$
- Switches directly from TTL Logic (U306)

### PIN CONFIGURATION



### APPLICATIONS

- Analog Switches
- Commutators
- Choppers

### ABSOLUTE MAXIMUM RATINGS

( $T_A = 25^\circ\text{C}$  unless otherwise noted)

Gate-Drain or Gate-Source Voltage (Note 1)	30V
Gate Current	50mA
Storage Temperature Range	$-65^\circ\text{C}$ to $+200^\circ\text{C}$
Operating Temperature Range	$-55^\circ\text{C}$ to $+150^\circ\text{C}$
Lead Temperature (Soldering, 10sec)	300°C
Power Dissipation	350mW
Derate above $25^\circ\text{C}$	2.8mW/ $^\circ\text{C}$

NOTE: Stresses above those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other conditions above those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

### ORDERING INFORMATION

TO-18
U304
U305
U306

### ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter	Test Conditions	U304		U305		U306		Units
			Min	Max	Min	Max	Min	Max	
$I_{GSS}$	Gate Reverse Current	$V_{GS} = 20\text{V}, V_{DS} = 0$		500		500		500	pA
		$T_A = 150^\circ\text{C}$		1.0		1.0		1.0	$\mu\text{A}$
$BV_{GSS}$	Gate-Source Breakdown Voltage	$I_G = 1\mu\text{A}, V_{DS} = 0$	30		30		30		V
$V_{GS(off)}$	Gate-Source Cutoff Voltage	$V_{DS} = -15\text{V}, I_D = -1\mu\text{A}$	5	10	3	6	1	4	
$V_{DS(on)}$	Drain-Source ON Voltage	$V_{GS} = 0, I_D = -15\text{mA}$ (U304), $I_D = -7\text{mA}$ (U305), $I_D = -3\text{mA}$ (U306)		-1.3		-0.8		-0.6	
$I_{DSS}$	Saturation Drain Current (Note 1)	$V_{DS} = -15\text{V}, V_{GS} = 0$	-30	-90	-15	-60	-5	-25	mA
$I_{D(off)}$	Drain Cutoff Current	$V_{DS} = -15\text{V}, V_{GS} = 12\text{V}$ (U304), $V_{GS} = 7\text{V}$ (U305), $V_{GS} = 5\text{V}$ (U306)		-500		-500		-500	pA
		$T_A = 150^\circ\text{C}$		-1.0		-1.0		-1.0	$\mu\text{A}$
$r_{DS(on)}$	Static Drain-Source ON Resistance	$V_{GS} = 0\text{V}, I_D = -1\text{mA}$		85		110		175	$\Omega$
$r_{ds(on)}$	Drain-Source ON Resistance	$V_{GS} = 0\text{V}, I_D = 0$ $f = 1\text{kHz}$		85		110		175	$\Omega$

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NOTE: All typical values have been characterized but are not tested.

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**U304-U306****INTERMIL**

T-37-25

U304-U306

**ELECTRICAL CHARACTERISTICS** (Continued) ( $T_A = 25^\circ\text{C}$  unless otherwise specified)

Symbol	Parameter	Test Conditions				U304		U305		U306		Units
						Min	Max	Min	Max	Min	Max	
C <sub>iss</sub>	Common-Source Input Capacitance (Note 2)	V <sub>DS</sub> = -15V, V <sub>GS</sub> = 0		f = 1MHz			27		27		27	pF
C <sub>rss</sub>	Common-Source Reverse Transfer Capacitance (Note 2)	V <sub>DS</sub> = 0, V <sub>GS</sub> = 12V (U304) V <sub>GS</sub> = 7V (U305), V <sub>GS</sub> = 5V (U306)					7		7		7	
t <sub>d(on)</sub>	Turn-ON Delay Time (Note 2)		U304	U305	U306							ns
t <sub>r</sub>	Rise Time (Note 2)	V <sub>DD</sub>	-10V	-6V	-8V		20		25		25	
t <sub>d(off)</sub>	Turn-OFF Delay Time (Note 2)	V <sub>GS(off)</sub>	12V	7V	5V		15		25		35	
t <sub>f</sub>	Fall Time (Note 2)	R <sub>L</sub>	580Ω	743Ω	1800Ω		10		15		20	
		V <sub>GS(on)</sub>	0	0	0		25		40		60	
		I <sub>D(on)</sub>	-15mA	-7mA	-3mA							

NOTES: 1. Pulse test pulsewidth = 300 $\mu\text{s}$ , duty cycle  $\leq 3\%$ .

2. For design reference only, not 100% tested.

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NOTE: All typical values have been characterized but are not tested.