T-37-25

INTERSIL

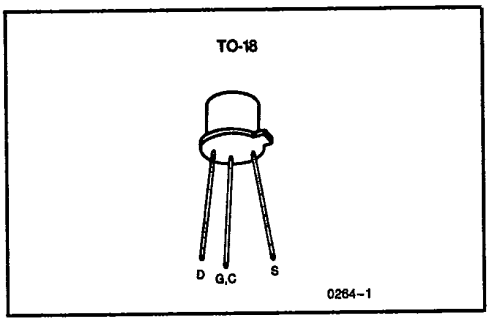
U304-U306

U304-U306
P-Channel JFET Switch

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

APPLICATIONS
- Analog Switches
- Commutators
- Choppers

PIN CONFIGURATION



ABSOLUTE MAXIMUM RATINGS

(T_A = 25°C unless otherwise noted)

Gate-Drain or Gate-Source Voltage (Note 1) 30V
Gate Current 50mA
Storage Temperature Range ..... −65°C to +200°C
Operating Temperature Range ..... −55°C to +150°C
Lead Temperature (Soldering, 10sec) ..... 300°C
Power Dissipation 350mW
Derate above 25°C ..... 2.8mW/°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°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} = 20V, V_{DS} = 0		500		500		500	pA
		T_A = 150°C		1.0		1.0		1.0	µA
BV_{GSS}	Gate-Source Breakdown Voltage	I_G = 1µA, V_{DS} = 0	30		30		30		V
$V_{GS(off)}$	Gate-Source Cutoff Voltage	V_{DS} = −15V, I_D = −1µA	5	10	3	6	1	4	V
$V_{DS(on)}$	Drain-Source ON Voltage	V_{GS} = 0, I_D = −15mA (U304), I_D = −7mA (U305), I_D = −3mA (U306)		−1.3		−0.8		−0.6	V
I_{DSS}	Saturation Drain Current (Note 1)	V_{DS} = −15V, V_{GS} = 0	−30	−90	−15	−60	−5	−25	mA
$I_{D(off)}$	Drain Cutoff Current	V_{DS} = −15V, V_{GS} = 12V (U304) V_{GS} = 7V (U305) V_{GS} = 5V (U306)		−500		−500		−500	pA
		T_A = 150°C		−1.0		−1.0		−1.0	µA
$r_{DS(on)}$	Static Drain-Source ON Resistance	V_{GS} = 0V, I_D = −1mA		85		110		175	Ω
$r_{ds(on)}$	Drain-Source ON Resistance	V_{GS} = 0V, I_D = 0, f = 1kHz		85		110		175	Ω

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

U304-U306

INTERSIL

T-37-25

ELECTRICAL CHARACTERISTICS (Continued) (T_A = 25°C unless otherwise specified)

Symbol	Parameter	Test Conditions				U304		U305		U306		Units
						Min	Max	Min	Max	Min	Max	
C_{iss}	Common-Source Input Capacitance (Note 2)	V_{DS} = −15V, V_{GS} = 0			f = 1MHz		27		27		27	pF
C_{rss}	Common-Source Reverse Transfer Capacitance (Note 2)	V_{DS} = 0, V_{GS} = 12V (U304) V_{GS} = 7V (U305), V_{GS} = 5V (U306)					7		7		7	
			U304	U305	U306							
$t_{d(on)}$	Turn-ON Delay Time (Note 2)	V_{DD}	−10V	−6V	−6V		20		25		25	ns
t_r	Rise Time (Note 2)	$V_{GS(off)}$	12V	7V	5V		15		25		35	
$t_{d(off)}$	Turn-OFF Delay Time (Note 2)	R_L	580Ω	743Ω	1800Ω		10		15		20	
t_f	Fall Time (Note 2)	$V_{GS(on)}$	0	0	0		25		40		60	
		$I_{D(on)}$	−15mA	−7mA	−3mA							

NOTES: 1. Pulse test pulsewidth = 300μs, duty cycle ≤ 3%.
2. For design reference only, not 100% tested.

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