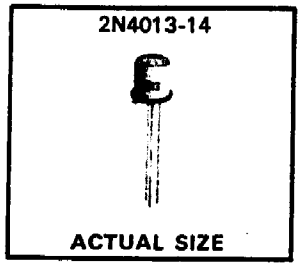
New Jersey Semi-Conductor Products, Inc.

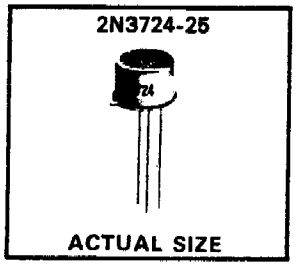
20 STERN AVE.
SPRINGFIELD, NEW JERSEY 07081
U.S.A.

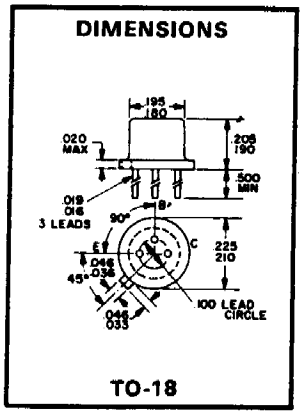
TELEPHONE: (201) 376-2922
(212) 227-6005
FAX: (201) 376-8960

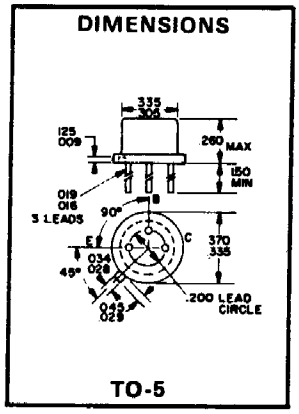
SILICON SWITCHING TRANSISTORS **2N3724 2N3725 2N4013 2N4014**

HIGH SPEED NPN SILICON PLANAR EPITAXIAL HIGH-VOLTAGE HIGH-CURRENT TRANSISTORS









- **High Voltage: 80V min. 2N3725, 2N4014**
- **High Gain: 65 typ. @ 1000 mA**
- **Low V_{CE} (sat): 0.5V typ. @ 1000 mA**
- **Low C_{ob}: 4.8 pF typ. @ 10V. 2N3725, 2N4014**
- **Fast t_{on}: 18 nsec typ. @ 500mA**
- **Fast t_{off}: 45 nsec typ. @ 500mA**

The ITT 2N3724 • 2N3725 and 2N4013 • 2N4014 are high-voltage, high-current NPN silicon planar epitaxial transistors useful for applications requiring breakdown voltages up to 50V and operating current to one ampere. Low saturation voltage and fast switching times make the transistor ideal for high-frequency amplifiers, core drivers, relay drivers and pulse generators.

ABSOLUTE MAXIMUM RATINGS

CHARACTERISTICS	2N3724 2N4013	2N3725 2N4014	UNITS
Collector-to-Base Voltage	50	80	Volts
Collector-to-Emitter Voltage (shorted base)	50	80	Volts
Collector-to-Emitter Voltage (open base)	30	50	Volts
Emitter-to-Base Voltage	6.0	6.0	Volts
Collector Current (300 μsec; 1% duty cycle)	1.0	1.0	Amps
Junction Temperature (op. and stg.)	−65 to +200		°C
Maximum Power Dissipation	**2N4013 2N4014**	**2N3724 2N3725**	
Total Dissipation @ T_C=25°C	1.2	3.5	Watts
(derate above 25°C)	(6.8 mW/°C)	(20mW/°C)	
Total Dissipation @ T_A=25°C	0.36	0.8	Watts
(derate above 25°C)	(2.06 mW/°C)	(4.56 mW/°C)	

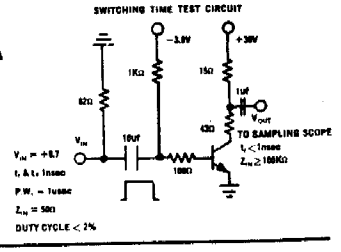
New Jersey Semi-Conductor Products, Inc.

20 STERN AVE.
SPRINGFIELD, NEW JERSEY 07081
U.S.A.

TELEPHONE: (201) 376-2922
(212) 227-6005
FAX: (201) 376-8960

ELECTRICAL CHARACTERISTICS @ 25°C unless otherwise noted.

SYMBOL	2N3724 2N4013 MIN.	2N3724 2N4013 TYP.	2N3724 2N4013 MAX.	2N3725 2N4014 MIN.	2N3725 2N4014 TYP.	2N3725 2N4014 MAX.	UNIT	CONDITIONS
BV_{CBO}	**50**			**80**			**Vdc**	**I_C=10μA**
BV_{CES}	50			80			Vdc	I_C=10μA
LV_{CEO}[1,2]	**30**			**50**			**Vdc**	**I_C=10mA**
BV_{EBO}	6.0			6.0			Vdc	I_E=10μA
h_{FE}[1]	30	60		30	60			I_C=10mA V_{CE}=1.0V
	60	90	150	60	90	150		I_C=100mA V_{CE}=1.0V
	40	65		40	65			I_C=300mA V_{CE}=1.0V
	35	50		35	50			I_C=500mA V_{CE}=1.0V
	25	45		20	40			I_C=800mA V_{CE}=2.0V
	30	**65**		**25**	**65**			**I_C=1000mA V_{CE}=5.0V**
	30	45		30	40			I_C=100mA V_{CE}=1.0V T_A=−55°C
	20	40		20	35			I_C=500mA V_{CE}=1.0V T_A=−55°C
V_{CE}(sat)[1]		0.11	0.25		0.19	0.25	Vdc	I_C=10mA I_B=1.0mA
		0.13	0.2		0.21	0.26	Vdc	I_C=100mA I_B=10mA
		0.22	0.32		0.31	0.4	Vdc	I_C=300mA I_B=30mA
		0.3	0.42		0.4	0.52	Vdc	I_C=500mA I_B=50mA
		0.4	0.65		0.5	0.8	Vdc	I_C=800mA I_B=80mA
		0.5	**0.75**		**0.6**	**0.95**	**Vdc**	**I_C=1000mA I_B=100mA**
V_{BE} (sat)[1]		0.64	0.76		0.64	0.76	Vdc	I_C=10mA I_B=1.0mA
		0.75	0.86		0.75	0.86	Vdc	I_C=100mA I_B=10mA
		0.89	1.1		0.89	1.1	Vdc	I_C=300mA I_B=30mA
	0.9	0.95	1.2	0.9	0.95	1.2	Vdc	I_C=500mA I_B=50mA
		1.0	1.5		1.0	1.5	Vdc	I_C=800mA I_B=80mA
		1.1	1.7		1.1	1.7	Vdc	I_C=1000mA I_B=100mA
I_{CBO}		0.25	1.7				μA	V_{CB}=40V
					0.33	1.7	μA	V_{CB}=60V
		27	120				μA	V_{CB}=40V T_A=100°C
					25	120	μA	V_{CB}=60V T_A=100°C
C_{ob}		**6.0**	**12**		**4.8**	**10**	**pF**	**V_{CB}=10V**
C_{ib}		40	55		40	55	pF	V_{EB}=0.5V
h_{fe}	3.0	4.5		3.0	4.5			I_C=50mA V_{CE}=10V f=100MHz
t_{on}		**18**	**35**		**18**	**35**	**nsec**	**I_C≈500mA I_{B1}≈50mA I_{B2}≈50mA**
t_{off}		**45**	**60**		**45**	**60**	**nsec**	



NOTES: 1. Pulsed width ≤300 μsec; 1% duty cycle.
2. Lowest emitter-to-collector voltage.