



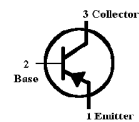
NES
NEW ENGLAND SEMICONDUCTOR

2N3725

NPN SWITCHING TRANSISTORS

- FAST SWITCHING
- HIGH VOLTAGE
- HIGH CURRENT GAIN
- LOW SATURATION VOLTAGE

NPN
SILICON
SWITCHING
TRANSISTOR



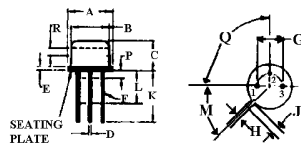
TO-39
TO-205AD

MAXIMUM RATINGS

RATINGS	SYMBOL	2N3725	UNITS
Collector-Emitter Voltage	V_{CEO}	50	Vdc
Collector-Base Voltage	V_{CBO}	80	Vdc
Emitter-Base Voltage	V_{EB0}	6.0	Vdc
Collector Current -- Continuous	I_C	500	mAdc
Total Power Dissipation @ $T_A = 25^{\circ}C$ Derate above $25^{\circ}C$	P_D	1.0 5.71	W mW/ $^{\circ}C$
Total Power Dissipation @ $T_C = 25^{\circ}C$ Derate above $25^{\circ}C$	P_D	5.0 28.6	W mW/ $^{\circ}C$
Operating & Storage Junction Temperature Range	T_J, T_{stg}	-65 to +200	$^{\circ}C$

MECHANICAL OUTLINE

PIN: 1. EMITTER
2. BASE
3. COLLECTOR



DIM	MILLIMETER		INCHES	
	MIN	MAX	MIN	MAX
A	8.99	9.40	0.350	0.370
B	8.00	8.51	0.315	0.336
C	6.10	6.60	0.240	0.260
D	0.406	0.533	0.016	0.021
E	0.229	3.18	0.009	0.125
F	0.406	0.483	0.016	0.018
G	4.83	5.33	0.190	0.210
H	0.711	0.864	0.028	0.034
J	0.737	1.02	0.029	0.040
K	12.70	-	0.600	-
L	6.35	-	0.250	-
M	46 ^μ NOM		46 ^μ NOM	
P	-	1.27	-	0.060
Q	90 ^μ NOM		90 ^μ NOM	
R	2.54	-	0.108	-

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T4-4.8-860-315 REV: --



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

Characteristics	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector-Emitter Breakdown Voltage (1) I _C = 10 mA _{dc} , I _B = 0	V _{(BR)CEO}	50		V _{dc}
Collector-Emitter Breakdown Voltage I _C = 10 μA _{dc} , V _{BE} = 0	V _{(BR)CES}	80		V _{dc}
Collector-Base Breakdown Voltage I _C = 10 μA _{dc} , I _E = 0	V _{(BR)CBO}	80		V _{dc}
Emitter-Base Breakdown Voltage I _E = 10 μA _{dc} , I _C = 0	V _{(BR)EBO}	6.0		V _{dc}
Collector Cutoff Current V _{CB} = 60 V _{dc} , I _E = 0 V _{CB} = 60 V _{dc} , I _E = 0, T _A = 100°C	I _{CBO}		1.7 120	μA _{dc}
Collector Cutoff Current V _{CE} = 80 V _{dc} , V _{BE} = 0	I _{CES}		10	μA _{dc}
Base Current V _{CE} = 80 V _{dc} , V _{BE} = 0	I _B		10	μA _{dc}
ON CHARACTERISTICS (1)				
DC Current Gain I _C = 10 mA _{dc} , V _{CE} = 1.0 V _{dc} I _C = 100 mA _{dc} , V _{CE} = 1.0 V _{dc} I _C = 100 mA _{dc} , V _{CE} = 1.0 V _{dc} , T _A = -55°C I _C = 300 mA _{dc} , V _{CE} = 1.0 V _{dc} I _C = 500 mA _{dc} , V _{CE} = 1.0 V _{dc} I _C = 500 mA _{dc} , V _{CE} = 1.0 V _{dc} , T _A = -55°C I _C = 800 mA _{dc} , V _{CE} = 2.0 V _{dc} I _C = 1.0 A _{dc} , V _{CE} = 5.0 V _{dc} I _C = 800 mA _{dc} , V _{CE} = 2.0 V _{dc} I _C = 1.0 A _{dc} , V _{CE} = 5.0 V _{dc}	h _{FE}	30 60 30 40 35 20 25 30 20 25	150	
Collector-Emitter Saturation Voltage I _C = 10 mA _{dc} , I _B = 1.0 mA _{dc} I _C = 100 mA _{dc} , I _B = 10 mA _{dc} I _C = 300 mA _{dc} , I _B = 30 mA _{dc} I _C = 500 mA _{dc} , I _B = 50 mA _{dc} I _C = 800 mA _{dc} , I _B = 80 mA _{dc} I _C = 1.0 A _{dc} , I _B = 100 mA _{dc}	V _{CE(sat)}		0.25 0.26 0.40 0.52 0.80 0.95	V _{dc}
Base-Emitter Saturation Voltage I _C = 10 mA _{dc} , I _B = 1.0 mA _{dc} I _C = 100 mA _{dc} , I _B = 10 mA _{dc} I _C = 300 mA _{dc} , I _B = 30 mA _{dc} I _C = 500 mA _{dc} , I _B = 50 mA _{dc} I _C = 800 mA _{dc} , I _B = 80 mA _{dc} I _C = 1.0 A _{dc} , I _B = 100 mA _{dc}	V _{BE(sat)}		0.76 0.86 1.1 1.1 1.5 1.7	V _{dc}
SMALL SIGNAL CHARACTERISTICS				
Current-Gain -- Bandwidth Products (2) I _C = 50 mA _{dc} , V _{CE} = 10 V _{dc} , f = 100 MHz	f _T	300		MHz
Output Capacitance V _{CB} = 10 V _{dc} , I _E = 0, f = 1.0 MHz	C _{obc}		10	p ^F
Input Capacitance V _{EB} = 0.5 V _{dc} , I _C = 0, f = 1.0 MHz	C _{ibo}		55	p ^F
SWITCHING CHARACTERISTICS				
Delay Time	V _{CC} = 30 V _{dc} , V _{BE(off)} = 3.5 V _{dc} I _C = 500 mA _{dc} , I _{B1} = 50 mA _{dc}	t _d	10	ηS
Rise Time		t _r	30	
Turn-On Time	t _{on}	35		
Storage Time	t _s	50		
Fall Time	t _f	25		
Turn-Off Time	t _{off}	60		

(1) Pulse Test: Pulse Width = 300μs, Duty Cycle ≤ 2.0%.

(2) f_T = |h_{fe}| = f_{test}

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