



NES

NEW ENGLAND SEMICONDUCTOR

2N3725

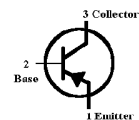
NPN SWITCHING TRANSISTORS

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

NPN
SILICON
SWITCHING
TRANSISTOR



TO-39
TO-205AD

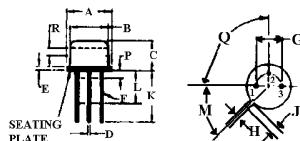


MAXIMUM RATINGS

RATINGS	SYMBOL	2N3725	UNITS
Collector-Emitter Voltage	V_{CEO}	50	Vdc
Collector-Base Voltage	V_{CB0}	80	Vdc
Emitter-Base Voltage	V_{EB0}	6.0	Vdc
Collector Current -- Continuous	I_C	500	mA _{dc}
Total Power Dissipation @ $T_A = 25^{\circ}\text{C}$	P_D	1.0	W
Derate above 25°C		5.71	mW/ $^{\circ}\text{C}$
Total Power Dissipation @ $T_C = 25^{\circ}\text{C}$	P_D	5.0	W
Derate above 25°C		28.6	mW/ $^{\circ}\text{C}$
Operating & Storage Junction Temperature Range	T_J, T_{stg}	-65 to +200	$^{\circ}\text{C}$

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 $^{\circ}$ NOM		46 $^{\circ}$ NOM	
P	-	1.27	-	0.060
Q	90 $^{\circ}$ NOM		90 $^{\circ}$ NOM	
R	2.54	-	0.108	-

NEW ENGLAND SEMICONDUCTOR

6 Lake Street Lawrence, MA 01841
1-800-446-1158 / (978) 794-1666 / FAX: (978) 689-0803

T4-4.8-860-315 REV: --



NES

NEW ENGLAND SEMICONDUCTOR

2N3725

ELECTRICAL CHARACTERISTICS ($T_C = 25^{\circ}\text{C}$ unless otherwise noted)

Characteristics	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector-Emitter Breakdown Voltage (1) $I_C = 10\text{ mAdc}, I_B = 0$	$V_{(BR)CEO}$	50		Vdc
Collector-Emitter Breakdown Voltage $I_C = 10\text{ }\mu\text{Ade}, V_{BE} = 0$	$V_{(BR)CES}$	80		Vdc
Collector-Base Breakdown Voltage $I_C = 10\text{ }\mu\text{Ade}, I_E = 0$	$V_{(BR)CBO}$	80		Vdc
Emitter-Base Breakdown Voltage $I_E = 10\text{ }\mu\text{Ade}, I_C = 0$	$V_{(BR)EBO}$	6.0		Vdc
Collector Cutoff Current $V_{CB} = 60\text{ Vdc}, I_E = 0$ $V_{CB} = 60\text{ Vdc}, I_E = 0, T_A = 100^{\circ}\text{C}$	I_{CBO}		1.7 120	μAde
Collector Cutoff Current $V_{CE} = 80\text{ Vdc}, V_{BE} = 0$	I_{CES}		10	μAde
Base Current $V_{CE} = 80\text{ Vdc}, V_{BE} = 0$	I_B		10	μAde

ON CHARACTERISTICS (1)

DC Current Gain $I_C = 10\text{ mAde}, V_{CE} = 1.0\text{ Vdc}$ $I_C = 100\text{ mAde}, V_{CE} = 1.0\text{ Vdc}$ $I_C = 100\text{ mAde}, V_{CE} = 1.0\text{ Vdc}, T_A = -55^{\circ}\text{C}$ $I_C = 300\text{ mAde}, V_{CE} = 1.0\text{ Vdc}$ $I_C = 500\text{ mAde}, V_{CE} = 1.0\text{ Vdc}$ $I_C = 500\text{ mAde}, V_{CE} = 1.0\text{ Vdc}, T_A = -55^{\circ}\text{C}$ $I_C = 800\text{ mAde}, V_{CE} = 2.0\text{ Vdc}$ $I_C = 1.0\text{ Ade}, V_{CE} = 5.0\text{ Vdc}$ $I_C = 800\text{ mAde}, V_{CE} = 2.0\text{ Vdc}$ $I_C = 1.0\text{ Ade}, V_{CE} = 5.0\text{ Vdc}$					h_{FE}	30 60 30 40 35 20 25 30 20 25	150	
Collector-Emitter Saturation Voltage $I_C = 10\text{ mAde}, I_B = 1.0\text{ mAde}$ $I_C = 100\text{ mAde}, I_B = 10\text{ mAde}$ $I_C = 300\text{ mAde}, I_B = 30\text{ mAde}$ $I_C = 500\text{ mAde}, I_B = 50\text{ mAde}$ $I_C = 800\text{ mAde}, I_B = 80\text{ mAde}$ $I_C = 1.0\text{ Ade}, I_B = 100\text{ mAde}$					$V_{CE(sat)}$		0.25 0.26 0.40 0.52 0.80 0.95	Vdc
Base-Emitter Saturation Voltage $I_C = 10\text{ mAde}, I_B = 1.0\text{ mAde}$ $I_C = 100\text{ mAde}, I_B = 10\text{ mAde}$ $I_C = 300\text{ mAde}, I_B = 30\text{ mAde}$ $I_C = 500\text{ mAde}, I_B = 50\text{ mAde}$ $I_C = 800\text{ mAde}, I_B = 80\text{ mAde}$ $I_C = 1.0\text{ Ade}, I_B = 100\text{ mAde}$					$V_{BE(sat)}$		0.76 0.86 1.1 1.1 1.5 1.7	Vdc

SMALL SIGNAL CHARACTERISTICS

Current-Gain -- Bandwidth Products (2) $I_C = 50\text{ mAde}, V_{CE} = 10\text{ Vdc}, f = 100\text{ MHz}$	fT	300		MHz
Output Capacitance $V_{CB} = 10\text{ Vdc}, I_E = 0, f = 1.0\text{ MHz}$	C_{obc}		10	p^{F}
Input Capacitance $V_{EB} = 0.5\text{ Vdc}, I_C = 0, f = 1.0\text{ MHz}$	C_{ibo}		55	p^{F}

SWITCHING CHARACTERISTICS

Delay Time	$V_{CC} = 30\text{ Vdc}, V_{BE(off)} = 3.5\text{ Vdc}$ $I_C = 500\text{ mAde}, I_{B1} = 50\text{ mAde}$	t_d		10	ηS
Rise Time		t_r		30	
Turn-On Time		t_{on}		35	
Storage Time	$V_{CC} = 30\text{ Vdc}, I_C = 500\text{ mAde},$ $I_{B1} = I_{B2} = 50\text{ mAde}$	t_s		50	
Fall Time		t_f		25	
Turn-Off Time		t_{off}		60	

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

(2) $fT = |h_{fe}| = f_{test}$

NEW ENGLAND SEMICONDUCTOR

6 Lake Street Lawrence, MA 01841
1-800-446-1158 / (978) 794-1666 / FAX: (978) 689-0803

T4-4.8-860-315 REV: --