

CentralTM Semiconductor Corp.

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Manufacturers of World Class Discrete Semiconductors

2N3724
2N3725
2N3725A

NPN SILICON TRANSISTOR

JEDEC TO-39 CASE

DESCRIPTION

The CENTRAL SEMICONDUCTOR 2N3724, 2N3725, 2N3725A types are Silicon NPN Planar Epitaxial Transistors designed for high voltage, high current, high speed switching applications.

MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$)

	SYMBOL	2N3724	2N3725	2N3725A	UNITS
Collector-Base Voltage	V_{CBO}	50	80	80	V
Collector-Emitter Voltage	V_{CEO}	30	50	50	V
Emitter-Base Voltage	V_{EBO}	6.0	6.0	6.0	V
Collector Current	I_C	1.2	1.2	1.2	A
Collector Current (Peak)	I_{CM}	1.75	1.75	1.75	A
Power Dissipation	P_D	0.8	0.8	1.0	W
Power Dissipation ($T_C = 25^\circ\text{C}$)	P_D	3.5	3.5	5.0	W
Operating and Storage Junction Temperature	T_J, T_{stg}	-65 to +200			$^\circ\text{C}$

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

SYMBOL	TEST CONDITIONS	2N3724		2N3725		2N3725A		UNIT
		MIN	MAX	MIN	MAX	MIN	MAX	
I_B	$V_{CE} = 50\text{V}$		10		-		-	μA
I_B	$V_{CE} = 80\text{V}$		-		10		10	μA
I_{CBO}	$V_{CB} = 40\text{V}$		1.7		-		-	μA
I_{CBO}	$V_{CB} = 40\text{V}, T_A = 100^\circ\text{C}$		120		-		-	μA
I_{CBO}	$V_{CB} = 60\text{V}$		-		1.7		0.5	μA
I_{CBO}	$V_{CB} = 60\text{V}, T_A = 100^\circ\text{C}$		-		120		50	μA
I_{CES}	$V_{CE} = 50\text{V}$		10		-		-	μA
I_{CES}	$V_{CE} = 80\text{V}$		-		10		10	μA
BV_{EBO}	$I_E = 10\mu\text{A}$	6.0		6.0		6.0		V
BV_{CBO}	$I_C = 10\mu\text{A}$	50		80		80		V
BV_{CES}	$I_C = 10\mu\text{A}$	50		80		80		V
BV_{CEO}	$I_C = 10\text{mA}$	30		50		50		V
$V_{CE(SAT)}$	$I_B = 1.0\text{mA}, I_C = 10\text{mA}$		0.25		0.25		0.25	V
$V_{CE(SAT)}$	$I_B = 10\text{mA}, I_C = 100\text{mA}$		0.20		0.26		0.26	V
$V_{CE(SAT)}$	$I_B = 30\text{mA}, I_C = 300\text{mA}$		0.32		0.40		0.40	V
$V_{CE(SAT)}$	$I_B = 50\text{mA}, I_C = 500\text{mA}$		0.42		0.52		0.52	V
$V_{CE(SAT)}$	$I_B = 80\text{mA}, I_C = 800\text{mA}$		0.65		0.80		0.80	V
$V_{CE(SAT)}$	$I_B = 100\text{mA}, I_C = 1.0\text{A}$		0.75		0.95		0.90	V

ELECTRICAL CHARACTERISTICS (Continued)

SYMBOL	TEST CONDITIONS	<u>2N3724</u>		<u>2N3725</u>		<u>2N3725A</u>		UNITS
		MIN	MAX	MIN	MAX	MIN	MAX	
$V_{BE(SAT)}$	$I_B = 1.0\text{mA}, I_C = 10\text{mA}$	0.76		0.76		0.76		V
$V_{BE(SAT)}$	$I_B = 10\text{mA}, I_C = 100\text{mA}$	0.86		0.86		0.86		V
$V_{BE(SAT)}$	$I_B = 30\text{mA}, I_C = 300\text{mA}$		1.1		1.1		1.0	V
$V_{BE(SAT)}$	$I_B = 50\text{mA}, I_C = 500\text{mA}$	0.80	1.1	0.80	1.1	0.80	1.1	V
$V_{BE(SAT)}$	$I_B = 80\text{mA}, I_C = 800\text{mA}$		1.5		1.5		1.3	V
$V_{BE(SAT)}$	$I_B = 100\text{mA}, I_C = 1.0\text{A}$		1.7		1.7	0.9	1.4	V
h_{FE}	$V_{CE} = 1.0\text{V}, I_C = 10\text{mA}$	30		30		30		
h_{FE}	$V_{CE} = 1.0\text{V}, I_C = 100\text{mA}$	60	150	60	150	60	150	
h_{FE}	$V_{CE} = 1.0\text{V}, I_C = 300\text{mA}$	40		40		40		
h_{FE}	$V_{CE} = 1.0\text{V}, I_C = 500\text{mA}$	35		35		35		
h_{FE}	$V_{CE} = 2.0\text{V}, I_C = 800\text{mA}$	25		20		25		
h_{FE}	$V_{CE} = 5.0\text{V}, I_C = 1.0\text{A}$	30		25		25		
h_{FE}	$V_{CE} = 5.0\text{V}, I_C = 1.5\text{A}$		-		-	20		
f_T	$V_{CE} = 10\text{V}, I_C = 50\text{mA}, f = 100\text{MHz}$	300		300		300		MHz
C_{ob}	$V_{CB} = 10\text{V}, I_E = 0, f = 1\text{MHz}$		12		10		10	pF
C_{ib}	$V_{EB} = 10\text{V}, I_C = 0, f = 1\text{MHz}$		55		55		55	pF
t_d	$V_{CC} = 30\text{V}, I_C = 500\text{mA}, I_{B1} = 50\text{mA}$		10		10		10	ns
t_r	$V_{CC} = 30\text{V}, I_C = 500\text{mA}, I_{B1} = 50\text{mA}$		30		30		30	ns
t_{on}	$V_{CC} = 30\text{V}, I_C = 500\text{mA}, I_{B1} = 50\text{mA}$		35		35		35	ns
t_s	$V_{CC} = 30\text{V}, I_C = 500\text{mA}, I_{B1} = I_{B2} = 50\text{mA}$		50		50		50	ns
t_f	$V_{CC} = 30\text{V}, I_C = 500\text{mA}, I_{B1} = I_{B2} = 50\text{mA}$		25		30		30	ns
t_{off}	$V_{CC} = 30\text{V}, I_C = 500\text{mA}, I_{B1} = I_{B2} = 50\text{mA}$		60		60		60	ns
t_{on}	$V_{CC} = 30\text{V}, I_C = 1.0\text{A}, I_{B1} = I_{B2} = 100\text{mA}$		-		-		50	ns
t_{off}	$V_{CC} = 30\text{V}, I_C = 1.0\text{A}, I_{B1} = I_{B2} = 100\text{mA}$		-		-		50	ns

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