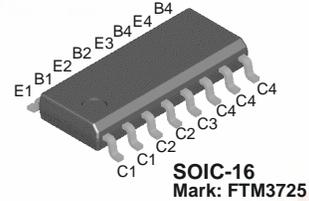


FAIRCHILD
SEMICONDUCTOR®

FTM3725

NPN Transistor

- This device is designed for high current, low impedance line driver applications.
- Sourced from process 26.



Absolute Maximum Ratings* $T_a=25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Value	Units
V_{CEO}	Collector-Emitter Voltage	40	V
V_{CBO}	Collector-Base Voltage	60	V
V_{EBO}	Emitter-Base Voltage	6.0	V
I_C	Collector Current - Continuous	1.2	A
T_J, T_{STG}	Operating and Storage Junction Temperature Range	- 55 ~ 150	$^\circ\text{C}$

* These ratings are limiting values above which the serviceability of any semiconductor device may be impaired.

NOTES:

- These ratings are based on a maximum junction temperature of 150 degrees C.
- These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.

Electrical Characteristics $T_a=25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristics						
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage *	$I_C = 10\text{mA}, I_B = 0$	40			V
$V_{(BR)CES}$	Collector-Emitter Breakdown Voltage	$I_C = 10\mu\text{A}, V_{BE} = 0$	60			V
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	$I_C = 10\mu\text{A}, I_E = 0$	60			V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	$I_E = 10\mu\text{A}, I_C = 0$	6.0			V
I_{CBO}	Collector Cutoff Current	$V_{CB} = 50\text{V}, I_E = 0$ $V_{CB} = 50\text{V}, I_E = 0, T_a = 100^\circ\text{C}$			100 10	nA μA
On Characteristics *						
h_{FE}	DC Current Gain	$I_C = 10\text{mA}, V_{CE} = 1.0\text{V}$ $I_C = 100\text{mA}, V_{CE} = 1.0\text{V}$ $I_C = 100\text{mA}, V_{CE} = 1.0\text{V}, T_a = 55^\circ\text{C}$ $I_C = 300\text{mA}, V_{CE} = 1.0\text{V}$ $I_C = 500\text{mA}, V_{CE} = 1.0\text{V}$ $I_C = 500\text{mA}, V_{CE} = 1.0\text{V}, T_a = 55^\circ\text{C}$ $I_C = 800\text{mA}, V_{CE} = 2.0\text{V}$ $I_C = 1.0\text{mA}, V_{CE} = 5.0\text{V}$	30 60 30 40 35 20 20 25		180	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = 10\text{mA}, I_B = 1.0\text{mA}$ $I_C = 100\text{mA}, I_B = 10\text{mA}$ $I_C = 300\text{mA}, I_B = 30\text{mA}$ $I_C = 500\text{mA}, I_B = 50\text{mA}$ $I_C = 800\text{mA}, I_B = 80\text{mA}$ $I_C = 1.0\text{mA}, I_B = 100\text{mA}$			0.25 0.26 0.4 0.52 0.8 0.95	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C = 10\text{mA}, I_B = 1.0\text{mA}$ $I_C = 100\text{mA}, I_B = 10\text{mA}$ $I_C = 300\text{mA}, I_B = 30\text{mA}$ $I_C = 500\text{mA}, I_B = 50\text{mA}$ $I_C = 800\text{mA}, I_B = 80\text{mA}$ $I_C = 1.0\text{mA}, I_B = 100\text{mA}$			0.76 0.86 1.1 1.2 1.5 1.7	V



Electrical Characteristics* (Continued) $T_a=25^\circ\text{C}$ unless otherwise noted

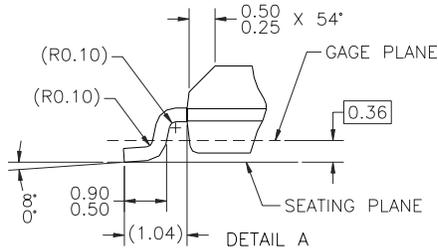
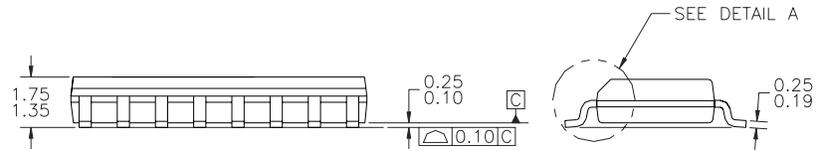
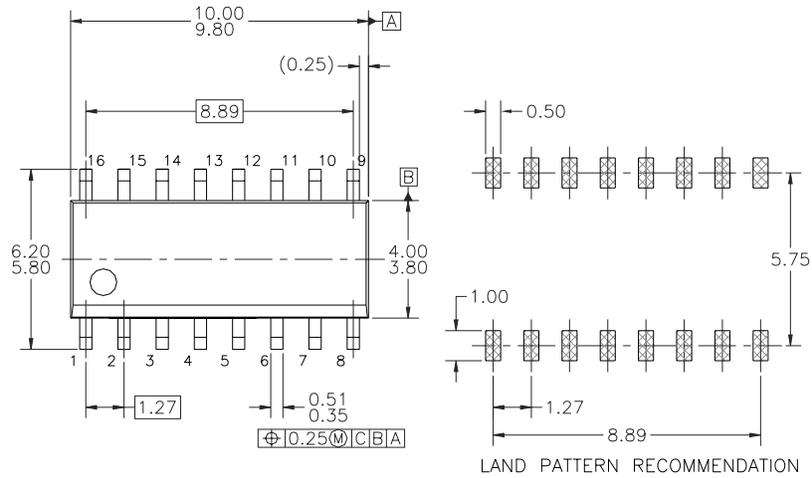
Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Small Signal Characteristics						
f_T	Current Gain Bandwidth Product	$I_C = 50\text{mA}$, $V_{CE} = 10\text{V}$, $f = 100\text{MHz}$	250			MHz
C_{obo}	Output Capacitance	$V_{CB} = 10\text{V}$, $I_E = 0$, $f = 1.0\text{MHz}$			15	pF
C_{ibo}	Input Capacitance	$V_{EB} = 0.5\text{V}$, $I_C = 0$, $f = 1.0\text{MHz}$			65	pF
Switching Characteristics						
t_{on}	Turn-on Time	$V_{CC} = 30\text{V}$, $V_{BE} = 3.8\text{V}$ $I_C = 500\text{mA}$, $I_{B1} = 50\text{mA}$		20		ns
t_d	Delay Time			10		ns
t_r	Rise Time			12		ns
t_{off}	Turn-off Time	$V_{CC} = 30\text{V}$, $I_C = 500\text{mA}$ $I_{B1} = I_{B2} = 50\text{mA}$		250		ns
t_s	Storage Time			235		ns
t_f	Fall Time			15		ns

* Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 1.0\%$ **Thermal Characteristics** $T_a=25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Max.	Units
P_D	Total Device Dissipation	1.0	W
	Derate above 25°C	8.0	$\text{mW}/^\circ\text{C}$
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient		
	Effectine 4 Die Each Die	125 240	$^\circ\text{C}/\text{W}$ $^\circ\text{C}/\text{W}$

Package Dimensions

SOIC-16



NOTES: UNLESS OTHERWISE SPECIFIED

- A) THIS PACKAGE CONFORMS TO JEDEC MS-012, VARIATION AC, ISSUE C, DATED MAY 1990.
- B) ALL DIMENSIONS ARE IN MILLIMETERS.
- C) STANDARD LEAD FINISH:
200 MICRONS / 5.08 MICRONS MIN.
LEAD/TIN (SOLDER) ON COPPER.

Dimensions in Millimeters

TRADEMARKS

The following are registered and unregistered trademarks Fairchild Semiconductor owns or is authorized to use and is not intended to be an exhaustive list of all such trademarks.

ACE _x TM	FAST [®]	ISOPLANAR TM	Power247 TM	SuperFET TM
ActiveArray TM	FAST _r TM	LittleFET TM	PowerSaver TM	SuperSOT TM -3
Bottomless TM	FPS TM	MICROCOUPLER TM	PowerTrench [®]	SuperSOT TM -6
CoolFET TM	FRFET TM	MicroFET TM	QFET [®]	SuperSOT TM -8
CROSSVOLT TM	GlobalOptoisolator TM	MicroPak TM	QS TM	SyncFET TM
DOME TM	GTO TM	MICROWIRE TM	QT Optoelectronics TM	TinyLogic [®]
EcoSPARK TM	HiSeC TM	MSX TM	Quiet Series TM	TINYOPTO TM
E ² C _{MOS} TM	I ² C TM	MSXPro TM	RapidConfigure TM	TruTranslation TM
EnSigna TM	i-Lo TM	OCX TM	RapidConnect TM	UHC TM
FACT TM	ImpliedDisconnect TM	OCXPro TM	μSerDes TM	UltraFET [®]
FACT Quiet Series TM		OPTOLOGIC [®]	SILENT SWITCHER [®]	VCX TM
Across the board. Around the world. TM		OPTOPLANAR TM	SMART START TM	
The Power Franchise [®]		PACMAN TM	SPM TM	
Programmable Active Droop TM		POP TM	Stealth TM	

DISCLAIMER

FAIRCHILD SEMICONDUCTOR RESERVES THE RIGHT TO MAKE CHANGES WITHOUT FURTHER NOTICE TO ANY PRODUCTS HEREIN TO IMPROVE RELIABILITY, FUNCTION OR DESIGN. FAIRCHILD DOES NOT ASSUME ANY LIABILITY ARISING OUT OF THE APPLICATION OR USE OF ANY PRODUCT OR CIRCUIT DESCRIBED HEREIN; NEITHER DOES IT CONVEY ANY LICENSE UNDER ITS PATENT RIGHTS, NOR THE RIGHTS OF OTHERS.

LIFE SUPPORT POLICY

FAIRCHILD'S PRODUCTS ARE NOT AUTHORIZED FOR USE AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS WITHOUT THE EXPRESS WRITTEN APPROVAL OF FAIRCHILD SEMICONDUCTOR CORPORATION.

As used herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, or (c) whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in significant injury to the user.
2. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

PRODUCT STATUS DEFINITIONS

Definition of Terms

Datasheet Identification	Product Status	Definition
Advance Information	Formative or In Design	This datasheet contains the design specifications for product development. Specifications may change in any manner without notice.
Preliminary	First Production	This datasheet contains preliminary data, and supplementary data will be published at a later date. Fairchild Semiconductor reserves the right to make changes at any time without notice in order to improve design.
No Identification Needed	Full Production	This datasheet contains final specifications. Fairchild Semiconductor reserves the right to make changes at any time without notice in order to improve design.
Obsolete	Not In Production	This datasheet contains specifications on a product that has been discontinued by Fairchild semiconductor. The datasheet is printed for reference information only.