

FDD6030L

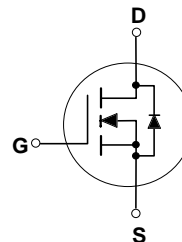
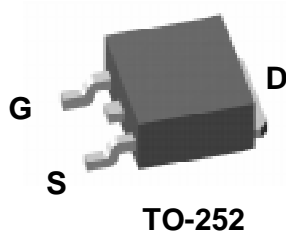
N-Channel Logic Level Enhancement Mode Field Effect Transistor

General Description

These N-Channel logic level enhancement mode power field effect transistors are produced using Fairchild's proprietary, high cell density, DMOS technology. This very high density process is especially tailored to minimize on-state resistance. These devices are particularly suited for low voltage applications such as DC/DC converters and high efficiency switching circuits where fast switching, low in-line power loss, and resistance to transients are needed.

Features

- 50 A, 30 V. $R_{DS(ON)} = 0.0135 \Omega @ V_{GS} = 10 \text{ V}$
 $R_{DS(ON)} = 0.0200 \Omega @ V_{GS} = 4.5 \text{ V}$.
- Low gate charge.
- Fast switching speed.
- Low C_{rss} .



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

Symbol	Parameter	Ratings	Units
V_{DSS}	Drain-Source Voltage	30	V
V_{GSS}	Gate-Source Voltage	± 20	V
I_D	Maximum Drain Current -Continuous (Note 1) (Note 1a)	50	A
	Maximum Drain Current -Pulsed	12	
P_D	Maximum Power Dissipation @ $T_C = 25^\circ\text{C}$ (Note 1)	150	W
	$T_A = 25^\circ\text{C}$ (Note 1a)	60	
	$T_A = 25^\circ\text{C}$ (Note 1b)	3.2	
T_J, T_{stg}	Operating and Storage Junction Temperature Range	1.3	$^\circ\text{C}$

Thermal Characteristics

$R_{\theta JC}$	Thermal Resistance, Junction-to- Case (Note 1)	2.1	$^\circ\text{C/W}$
$R_{\theta JA}$	Thermal Resistance, Junction-to- Ambient (Note 1a) (Note 1b)	39	$^\circ\text{C/W}$
		96	$^\circ\text{C/W}$

Package Marking and Ordering Information

Device Marking	Device	Reel Size	Tape width	Quantity
FDD6030L	FDD6030L	13"	16mm	2500

Electrical Characteristics T_c=25°C unless otherwise noted

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
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OFF CHARACTERISTICS

BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} = 0 V, I _D = 250 μ A	30			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = 24 V, V _{GS} = 0 V			10	μ A
I _{GSSF}	Gate-Body Leakage, Forward	V _{GS} = 20 V, V _{DS} = 0 V			100	nA
I _{GSSR}	Gate-Body Leakage, Reverse	V _{GS} = -20 V, V _{DS} = 0 V			-100	nA

ON CHARACTERISTICS (Note 2)

V _{GS(TH)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = 250 μ A	1		3	V
R _{DS(ON)}	Static Drain-Source On-Resistance	V _{GS} = 10 V, I _D = 12 A V _{GS} = 4.5 V, I _D = 10 A			0.0135 0.0200	Ω

DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS

I _S	Maximum Continuous Drain-Source Diode Forward Current				2.7	A
V _{SD}	Drain-Source Diode Forward Voltage	V _{GS} = 0 V, I _S = 2.7 A			1.2	V

Notes:

- R _{θ JA} is the sum of the junction-to-case and case-to-ambient thermal resistance where the case thermal reference is defined as the drain tab.
R _{θ JC} is guaranteed by design while R _{θ CA} is determined by the user's board design.



- a) R _{θ JA} = 40°C/W when mounted on a
 1 in² pad of 2oz copper.



- b) R _{θ JA} = 96°C/W when mounted on
 a 0.076 in² pad of 2oz copper.

Scale 1 : 1 on letter size paper

- Pulse Test: Pulse Width \leq 300 μ s, Duty Cycle \leq 2.0%

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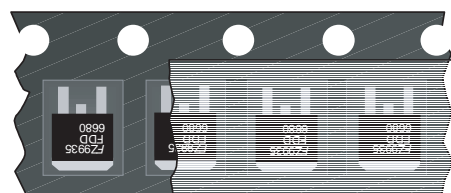
The diagram illustrates a blue tape reel with a black carrier tape. Key components and labels are identified:

- ESD Label:** A white label on the carrier tape with the Fairchild Semiconductor logo and text: "FAIRCHILD SEMICONDUCTOR", "ELECTRONIC COMPONENTS", "REEL INFORMATION", "PART NUMBER", "REEL DESCRIPTION", "DATE", and "LOT".
- Antistatic Cover Tape:** A white tape covering the top of the carrier tape.
- Static Dissipative Embossed Carrier Tape:** The black carrier tape with embossed features.
- F63TNR Label:** A white label on the carrier tape with the text "F63TNR".

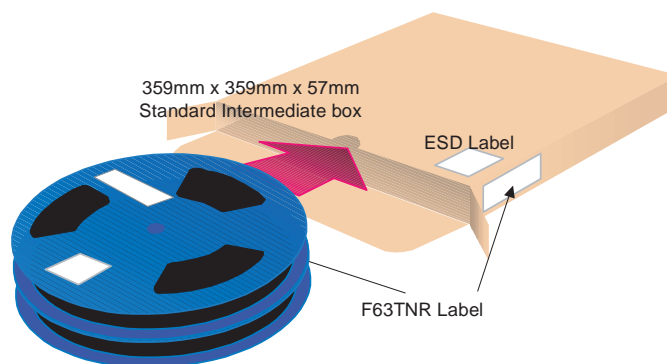
TO-252 parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 2500 units per 13" or 330cm diameter reel. The reels are dark blue in color and is made of polystyrene plastic (anti-static coated). This and some other options are further described in the Packaging Information table.




These full reels are individually barcode labeled and placed inside a standard intermediate box (illustrated in figure 1.0) made of recyclable corrugated brown paper. One box contains two reels maximum. And these boxes are placed inside a barcode labeled shipping box which comes in different sizes depending on the number of parts shipped.

D-PAK (TO-252) Packaging Information	
Packaging Option	Standard (no flow code)
Packaging type	TNR
Qty per Reel/Tube/Bag	2,500
Reel Size	13" Dia
Box Dimension (mm)	35x9.35x9.57
Max qty per Box	5,000
Weight per unit (gm)	0.300
Weight per Reel(kg)	1.200
Note/Comments	



D-PAK (TO-252) Unit Orientation

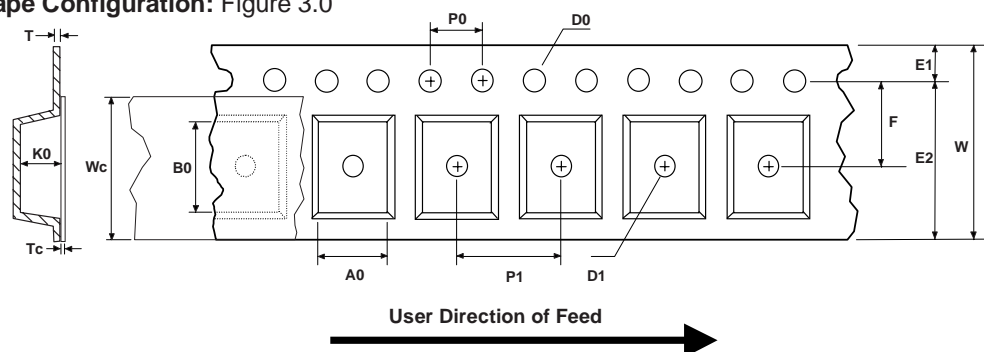


LOT: CBVK741B019	QTY: 2500
	
FSID: FDD6680	SPEC:
	
D/C1: Z9942	SPEC REV:
D/C2:	C/N:
QTY1:	N/F: F
QTY2:	(F63TNR)3

The diagram illustrates the layout of a composite tape assembly. It shows a sequence of components: a Trailer Tape (640mm minimum or 80 empty pockets), a series of Components, and a Leader Tape (1680mm minimum or 210 empty pockets). The assembly is shown with a Carrier Tape and a Cover Tape. The Carrier Tape is a long strip with a series of pockets, and the Cover Tape is a long strip that covers the Carrier Tape. The components are shown as rectangular blocks with circular features, arranged in a row. The Trailing Tape is on the left, followed by the Components, and the Leading Tape is on the right. The Carrier Tape and Cover Tape are shown as a single unit on the left, with arrows indicating they are applied to the components.

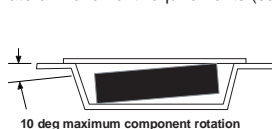
TO-252 Tape and Reel Data and Package Dimensions

D-PAK (TO-252) Embossed Carrier Tape Configuration: Figure 3.0

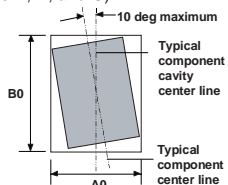


Dimensions are in millimeter														
Pkg type	A0	B0	W	D0	D1	E1	E2	F	P1	P0	K0	T	Wc	Tc
TO252 (24mm)	6.90 +/-0.10	10.50 +/-0.10	16.0 +/-0.3	1.55 +/-0.05	1.5 +/-0.10	1.75 +/-0.10	14.25 min	7.50 +/-0.10	8.0 +/-0.1	4.0 +/-0.1	2.65 +/-0.10	0.30 +/-0.05	13.0 +/-0.3	0.06 +/-0.02

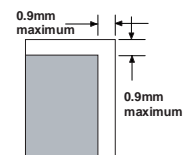
Notes: A0, B0, and K0 dimensions are determined with respect to the EIA/Jedec RS-481 rotational and lateral movement requirements (see sketches A, B, and C).



Sketch A (Side or Front Sectional View)
Component Rotation

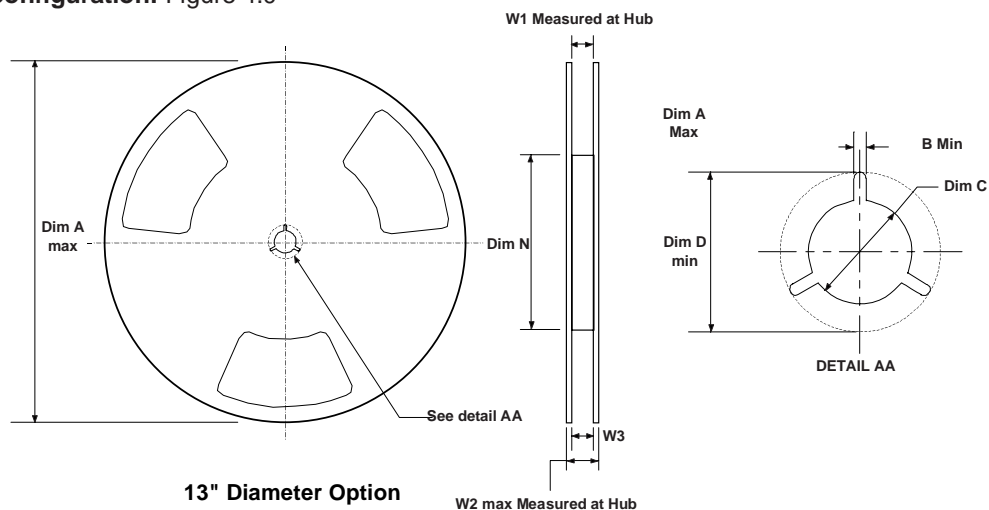


Sketch B (Top View)
Component Rotation



Sketch C (Top View)
Component lateral movement

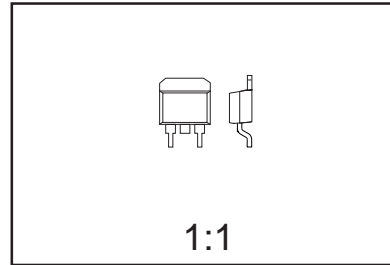
D-PAK (TO-252) Reel Configuration: Figure 4.0



Dimensions are in inches and millimeters									
Tape Size	Reel Option	Dim A	Dim B	Dim C	Dim D	Dim N	Dim W1	Dim W2	Dim W3 (LSL-USL)
164mm	13" Dia	13.00 330	0.059 1.5	512 +0.020/-0.008 13 +0.5/-0.2	0.795 20.2	4.00 100	0.646 +0.078/-0.000 16.4 +2/0	0.882 22.4	0.626 - 0.764 15.9 - 19.4

TO-252 Tape and Reel Data and Package Dimensions

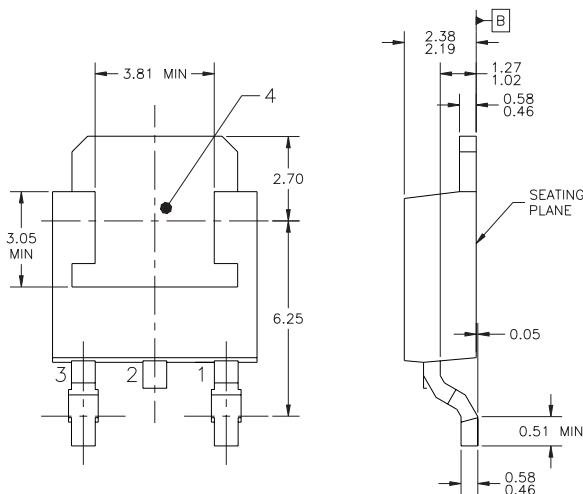
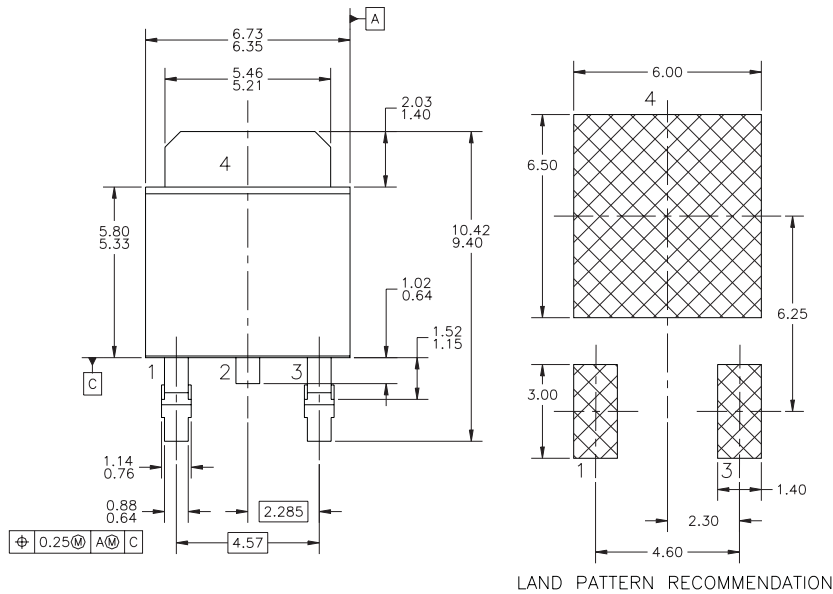
TO-252 (FS PKG Code AA)



Scale 1:1 on letter size paper

Dimensions shown below are in:
inches [millimeters]

Part Weight per unit (gram): 0.300



NOTES: UNLESS OTHERWISE SPECIFIED

A) ALL DIMENSIONS ARE IN MILLIMETERS.

B) THIS PACKAGE CONFORMS TO JEDEC, TO-252, ISSUE B, VARIATION AB, ITEM 10.268, DATED SEPTEMBER 1988.

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