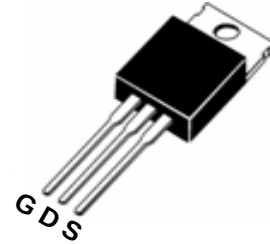




PIN Connection TO-220AB

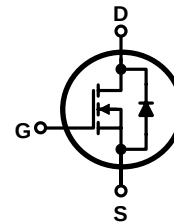
Description

- Trench power MOSFET technology
- Fast switching speed
- Low on-resistance
- 100% avalanche tested



Features

- $V_{DS} = 70V$
- $I_D = 80A$
- $R_{DS(on)} < 7m\Omega$ ($V_{GS} = 10V$)



Application

- Switching application
- Motor Drive

Marking Diagram



- Y = Year
A = Assembly Location
WW = Work Week
FIR80N07P = Specific Device Code

Absolute maximum ratings

Symbol	Parameter	Value	Unit
V_{DS}	Drain-source voltage ($V_{GS} = 0$)	70	V
V_{GS}	Gate-source voltag	± 25	V
$I_D^{(1)}$	Drain current (continuous) at $TC = 25^\circ C$	80	A
$I_{DM}^{(2)}$	Drain current (pulsed)	320	A
P_D	Power dissipation at $TC = 25^\circ C$	250	W
$E_{AS}^{(3)}$	Single pulse avalanche energy	600	mJ
T_j T_{stg}	Operating junction temperature Storage temperature	-55 to 150	$^\circ C$

1. Current limited by package
2. Pulse width limited by safe operating area
3. Starting $T_j = 25^\circ C$, $I_D = 35A$, $V_{DD} = 30V$, $L = 1mH$

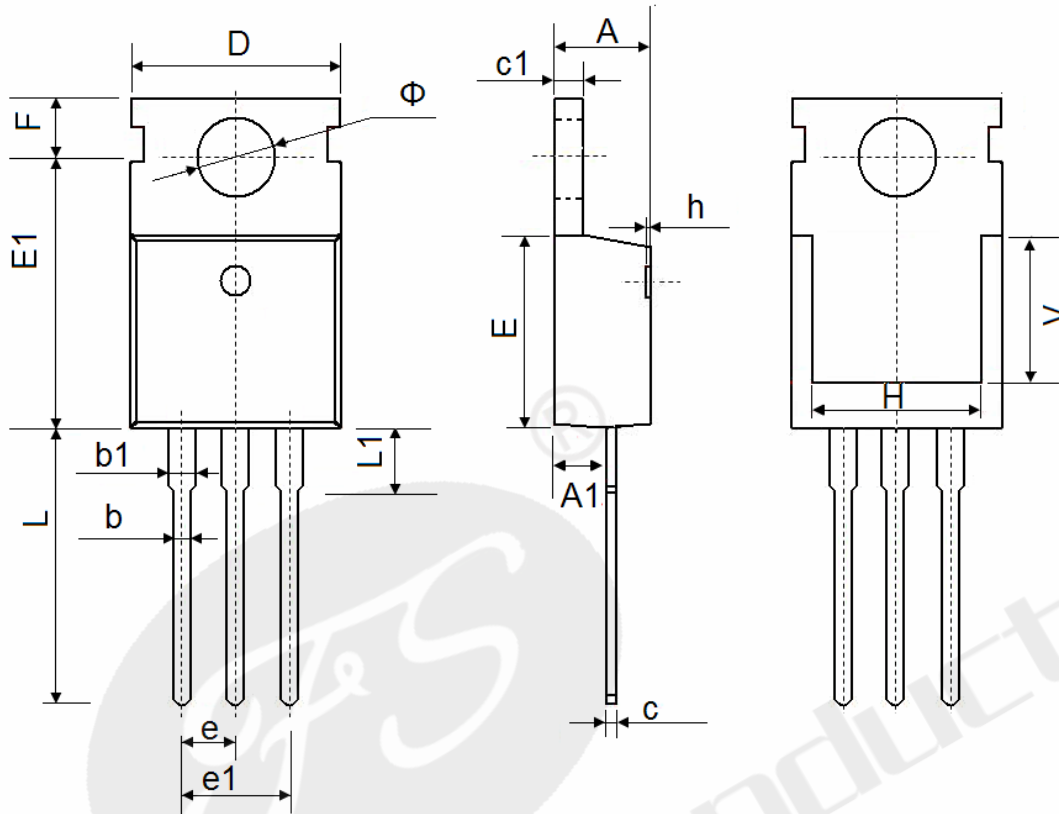
Thermal data

Symbol	Parameter	Min.	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-Ambient		62.5		°C/ W
$R_{\theta JC}$	Thermal Resistance Junction-Case		0.5		°C/ W

Electrical characteristics

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
$V_{(BR)DSS}$	Drain-source breakdown voltage	$I_D = 250 \mu A, V_{GS} = 0$	70			V
I_{DSS}	Zero gate voltage drain current ($V_{GS} = 0$)	$V_{DS} = \text{Max rating}$			1	μA
I_{GSS}	Gate body leakage current ($V_{DS} = 0$)	$V_{GS} = \pm 25V$			± 100	nA
$V_{GS(th)}$	Gate threshold voltage	$V_{DS} = V_{GS}, I_D = 250 \mu A$	2	3	4	V
$R_{DS(on)}$	Static drain-source on resistance	$V_{GS} = 10V, I_D = 40A$		6.5	7	m Ω
C_{iss} C_{oss} C_{rss}	Input capacitance Output capacitance Reverse transfer capacitance	$V_{DS} = 25V, f = 1 \text{ MHz}, V_{GS} = 0$		3500 260 340		pF pF pF
Q_g Q_{gs} Q_{gd}	Total gate charge Gate-source charge Gate-drain charge	$V_{DD} = 60V, I_D = 80A, V_{GS} = 10V$		75 16 22		nC nC nC
I_{SD}	Source-drain current				80	A
$I_{SDM}^{(2)}$	Source-drain current (pulsed)				320	A
V_{SD}	Forward on voltage	$I_{SD} = 80A, V_{GS} = 0$			1.2	V

1. Pulse width limited by safe operating area
2. Pulsed: pulse duration=300 μs , duty cycle 1.5%

TO-220AB Package Information


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.400	4.600	0.173	0.181
A1	2.250	2.550	0.089	0.100
b	0.710	0.910	0.028	0.036
b1	1.170	1.370	0.046	0.054
c	0.330	0.650	0.013	0.026
c1	1.200	1.400	0.047	0.055
D	9.910	10.250	0.390	0.404
E	8.9500	9.750	0.352	0.384
E1	12.650	12.950	0.498	0.510
e	2.540 TYP.		0.100 TYP.	
e1	4.980	5.180	0.196	0.204
F	2.650	2.950	0.104	0.116
H	7.900	8.100	0.311	0.319
h	0.000	0.300	0.000	0.012
L	12.900	13.400	0.508	0.528
L1	2.850	3.250	0.112	0.128
V	7.500 REF.		0.295 REF.	
Φ	3.400	3.800	0.134	0.150



Declaration

- FIRST reserves the right to change the specifications, the same specifications of products due to different packaging line mold, the size of the appearance will be slightly different, shipped in kind, without notice! Customers should obtain the latest version information before ordering, and verify whether the relevant information is complete and up-to-date.
- Any semiconductor product under certain conditions has the possibility of failure or failure, The buyer has the responsibility to comply with safety standards and take safety measures when using FIRST products for system design and manufacturing, To avoid To avoid potential failure risks, which may cause personal injury or property damage!
- Product promotion endless, our company will wholeheartedly provide customers with better products!

ATTACHMENT

Revision History

Date	REV	Description	Page
2018.01.01	1.0	Initial release	