Bay Linear

Linear Excellence

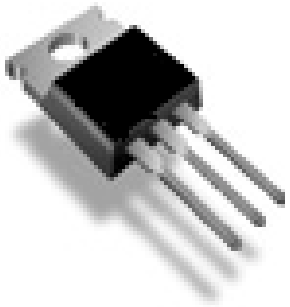
N-Channel Field Effect Transistor

50N035

Description

The Bay Linear n-channel power field effect transistors are produced using high cell density DMOS technology , These devices are particularly suited for low voltage applications such as automotive and other battery powered circuits where fast switching, low in-line power loss and resistance to transistors are needed.

The TO-220 is offered in a 3-pin is universally preferred for all commercial-industrial applications at power dissipation level to approximately to 50 watts. Also, available in a D^2 surface mount power package with a power dissipation up to 2 Watts



Features

- **Critical DC Electrical parameters specified at elevated Temp.**
- **Rugged internal source-drain diode can eliminate the need for external Zener diode transient suppresser**
- **Super high density cell design for extremely low $R_{DS(ON)}$**

V_{DSS} = 30V
$R_{DS\ (ON)}$ = 0.013 Ω
I_D = 52A

Ordering Information

Device	Package	Temp.
50N035T	TO-220	0 to 150°C
50N035S	TO-263 (D^2)	0 to 150°C

Absolute Maximum Rating

Symbol	Parameter	Max	Unit
I_D	Drain Current		
	Continues	52	A
	Pulsed	156	
V_{DSS}	Drain-Source Voltage	30	V
V_{GSV}	Gate Source Voltage	±20	V
P_D	Total Power Dissipation @ T_C =25°C	50	W
	Derate above 25°C	0.4	W/°C
T_J	Operating and Storage	-65 to 175	°C
T_{STG}	Temperature Range		

Electrical Characteristics (T_C = 25°C unless otherwise specified)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
OFF CHARACTERSTICS						
BV_{DSS}	Drain source breakdown voltage	V_{GS}=0V, I_D=250μA	30			**V**
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=24V V_{GS}=0V			10	**μA**
I_{GBLF}	Gate-Body Leakage Forward	V_{GS}=20V V_{DS}=0V			100	**nA**
I_{GBLR}	Gate-Body Leakage Reverse	V_{GS}=20V V_{DS}=0V			-100	**nA**
ON CHARACTERSTICS						
V_{GS}	Gate Threshold Voltage	V_{DS}=V_{GS} I_D=250μA	1		3	**V**
$R_{DS(ON)}$	Static Drain Voltage	V_{GS}=10V, I_D=26A V_{CS}=4.5V, I_O=21A			0.013 0.018	**Ω**
$I_{D(ON)}$	ON-State Drain Current	V_{GS}=10V	52			**A**
g_{fs}	Forward Tran conductance			32		
DYNAMIC CHARACTRISTICS						
C_{ISS}	Input Capacitance	V_{DS}= 15V, V_{GS}=0V F=1.0 MHZ			1800	**pF**
C_{OSS}	Output Capacitance				1000	**pF**
C_{RSS}	Reverse Tras. Capacitance				500	**pF**
SWITCHING CHARACTERSTICS						
$t_{D(ON)}$	Turn-ON Delay Time	V_{DD}=15V I_D=52A, V_{DS}=10V R_{GEN}=25Ω			25	**nS**
t_r	Turn-ON Rise Time				200	
$t_{d(off)}$	Turn-OFF Delay Time				50	
t_F	Turn-OFF Fall Time				120	
SOURCE DRAIN DIODE CHRACTERISTICS						
I_S	Maxim Continuous Drain source Diode Forward Current				52	**A**
V_{DS} (note)	Drain Source Diode Forward Voltage	V_{GS}=0V I_S=26A			1.30	**V**
THERMAI CHRACTERISTICS						
R_{JC}	Thermal Resistance, Junction to Case				2.5	**°C/W**
R_{JC}	Thermal Resistance, Junction to Ambient				62.5	**°C/W**

Note: Pulse Test: Pulse With≤ 300 μS, Duty Cycle ≤ 2.0%

Advance Information- These data sheets contain descriptions of products that are in development. The specifications are based on the engineering calculations, computer simulations and/ or initial prototype evaluation.

Preliminary Information- These data sheets contain minimum and maximum specifications that are based on the initial device characterizations. These limits are subject to change upon the completion of the full characterization over the specified temperature and supply voltage ranges.

The application circuit examples are only to explain the representative applications of the devices and are not intended to guarantee any circuit design or permit any industrial property right to other rights to execute. Bay Linear takes no responsibility for any problems related to any industrial property right resulting from the use of the contents shown in the data book. Typical parameters can and do vary in different applications. Customer's technical experts must validate all operating parameters including " Typical" for each customer application.

LIFE SUPPORT AND NUCLEAR POLICY

Bay Linear products are not authorized for and should not be used within life support systems which are intended for surgical implants into the body to support or sustain life, in aircraft, space equipment, submarine, or nuclear facility applications without the specific written consent of Bay Linear President.