DC COMPONENTS CO., LTD.

DISCRETE SEMICONDUCTORS

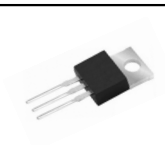
IRF830

TECHNICAL SPECIFICATIONS OF N-CHANNEL POWER MOSFET

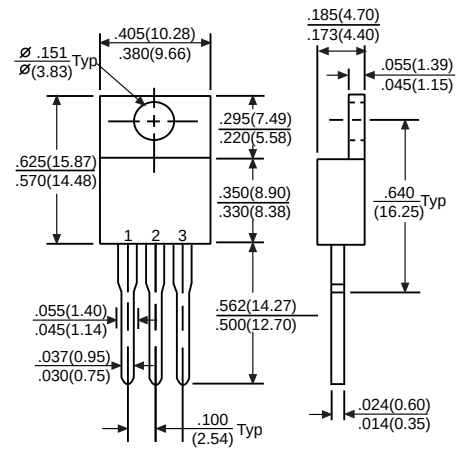
V_{DSS} = 500 Volts *$R_{DS(on)}$ = 1.5 Ohms* *I_D = 4.0 Amperes*

Features

* Repetitive Avalanche Rated
* Fast Switching
* Ease of Paralleling
* Simple Drive Requirements



TO-220AB



Dimensions in inches and (millimeters)

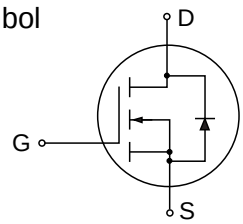
Description

Designed to withstand high energy in the avalanche mode and switch efficiently. Also offer a drain-to-source diode with fast recovery time. Designed for high voltage, high speed applications such as power supplies, PWM motor controls and other inductive loads, the avalanche energy capability is specified to eliminate the guesswork in designs where inductive loads are switched and offer additional safety margin against unexpected voltage transients.

Pinning

1 = Gate
2 = Drain
3 = Source

Symbol



N-Channel MOSFET

Absolute Maximum Ratings

Characteristic		Symbol	Rating	Unit
Drain Current @ T_C=25°C	Continuous Pulsed	I_D I_{DM}	4.0 10	A
Gate-to-Source Voltage		V_{GS}	± 20	V
Total Power Dissipation @ T_C=25°C Derate above 25°C		P_D	75 0.6	W W/°C
Operating Junction Temperature		T_J	-55 to +150	°C
Storage Temperature		T_{STG}	-55 to +150	°C
Maximum Lead Temperature for Soldering Purposes, 1/8" from Case for 10 Seconds		T_L	260	°C

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

Characteristic		Symbol	Min	Typ	Max	Unit	Test Conditions
Drain-Source Breakdown Voltage		$V_{(BR)DSS}$	500	-	-	V	V_{GS}=0V, I_D=250μA
Drain-Source Leakage Current		I_{DSS}	-	-	0.25	mA	V_{DS}=500V, V_{GS}=0V
			-	-	1.0		V_{DS}=400V, V_{GS}=0V, T_J=125°C
Gate-Source Forward Leakage Current		I_{GSSF}	-	-	100	nA	V_{GSF}=20V, V_{DS}=0V
Gate-Source Reverse Leakage Current		I_{GSSR}	-	-	-100		V_{GSR}=-20V, V_{DS}=0V
Gate Threshold Voltage		$V_{GS(th)}$	2.0	-	4.0	V	V_{DS}=V_{GS}, I_D=250μA
Static Drain-Source On-Resistance		$R_{DS(on)}$	-	1.3	1.5	Ω	V_{GS}=10V, I_D=2.0A(Note)
Forward Transconductance		g_{FS}	1.5	-	-	S	V_{DS}= 15V, I_D=2.0A(Note)
Input Capacitance		C_{iss}	-	775	-	pF	V_{DS}=25V, V_{GS}=0V, f=1.0MHz
Output Capacitance		C_{oss}	-	84	-		
Reverse Transfer Capacitance		C_{rss}	-	19	-		
Turn-On Delay Time		$t_{d(on)}$	-	24	-	ns	V_{DD}=250V, I_D=4.0A, V_{GS}=10V, R_G=12Ω, R_L=62Ω(Note)
Rise Time		t_r	-	34	-		
Turn-Off Delay Time		$t_{d(off)}$	-	60	-		
Fall Time		t_f	-	36	-		
Total Gate Charge		Q_g	-	27	-	nC	V_{DS}=400V, I_D=4.0A, V_{GS}=10V(Note)
Gate-Source Charge		Q_{gs}	-	3.5	-		
Gate-Drain Charge		Q_{gd}	-	14	-		
Internal Drain Inductance		L_D	-	4.5	-	nH	Measured from the drain lead 0.25" from package to center of die
Internal Source Inductance		L_S	-	7.5	-	nH	Measured from the source lead 0.25" from package to source bond pad
Diode Forward Voltage		V_{SD}	-	-	1.4	V	I_S=4.0A, V_{GS}=0V(Note)
Reverse Recovery Time		t_{rr}	-	-	760	ns	I_F=4.0A, di/dt=100A/μs(Note)
Forward Turn-On Time		t_{on}	Intrinsic turn-on time is neglegible and dominated by inductance L_S+L_D				
Thermal Resistance	Junction to Case	$R_{\theta JC}$	-	-	1.67	°C/W	-
	Junction to Ambient	$R_{\theta JA}$	-	-	62.5		

Note: Pulse Test: Pulse Width ≦ 300μs, Duty Cycle ≦ 2%