



DC COMPONENTS CO., LTD.

DISCRETE SEMICONDUCTORS

IRF630

TECHNICAL SPECIFICATIONS OF N-CHANNEL POWER MOSFET

$V_{DSS} = 200$ Volts

$R_{DS(ON)} = 0.4$ Ohm

$I_D = 9.0$ Amperes

Features

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

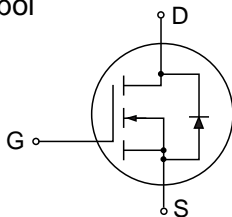
Description

Designed for low voltage, high speed power switching applications such as switching regulators, converters, solenoid and relay drivers.

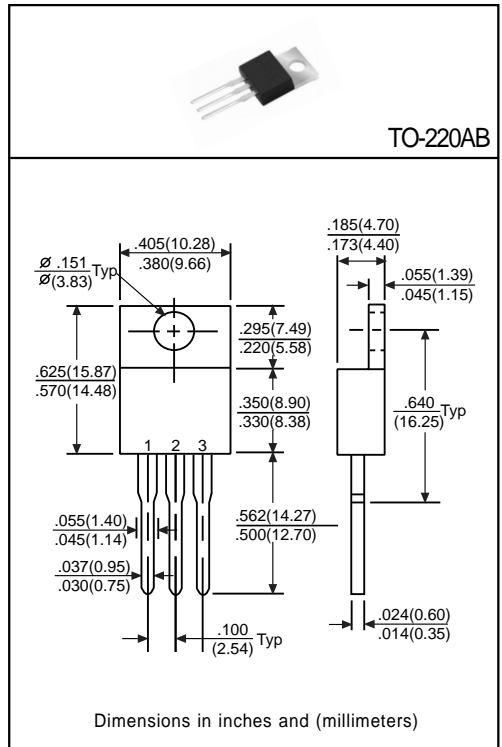
Pinning

- 1 = Gate
- 2 = Drain
- 3 = Source

Symbol



N-Channel MOSFET



Absolute Maximum Ratings

Characteristic	Symbol	Rating	Unit
Drain Current @ $T_c=25^\circ\text{C}$	I_D	9.0	A
Continuous Pulsed	I_{DM}	36	A
Gate-to-Source Voltage	V_{GS}	± 20	V
Total Power Dissipation @ $T_c=25^\circ\text{C}$ Derate above 25°C	P_D	74 0.59	W W/ $^\circ\text{C}$
Operating Junction Temperature	T_J	-55 to +150	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55 to +150	$^\circ\text{C}$
Maximum Lead Temperature for Soldering Purposes, 1/8" from Case for 10 Seconds	T_L	300	$^\circ\text{C}$

Electrical Characteristics ($T_J = 25^\circ\text{C}$ unless otherwise specified)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Conditions	
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	200	-	-	V	$V_{GS}=0V, I_D=250\mu A$	
Drain-Source Leakage Current	I_{DSS}	-	-	25	μA	$V_{DS}=200V, V_{GS}=0V$	
		-	-	250		$V_{DS}=160V, V_{GS}=0V, T_J=125^\circ\text{C}$	
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	$V_{DS}=V_{GS}, I_D=250\mu A$	
Static Drain-Source On-Resistance	$R_{DS(on)}$	-	-	0.4	Ω	$V_{GS}=10V, I_D=5.4A(\text{Note})$	
Forward Transconductance	g_{FS}	3.8	-	-	S	$V_{DS}=50V, I_D=5.4A(\text{Note})$	
Input Capacitance	C_{iss}	-	800	-	pF	$V_{DS}=25V, V_{GS}=0V, f=1.0\text{MHz}$	
Output Capacitance	C_{oss}	-	240	-			
Reverse Transfer Capacitance	C_{rss}	-	76	-			
Turn-On Delay Time	$t_{d(on)}$	-	9.4	-	ns	$V_{DD}=100V, I_D=5.9A, R_G=12\Omega, R_D=16\Omega(\text{Note})$	
Rise Time	t_r	-	28	-			
Turn-Off Delay Time	$t_{d(off)}$	-	39	-			
Fall Time	t_f	-	20	-			
Total Gate Charge	Q_g	-	-	43	nC	$V_{DS}=160V, I_D=5.9A, V_{GS}=10V(\text{Note})$	
Gate-Source Charge	Q_{gs}	-	-	7.0			
Gate-Drain Charge	Q_{gd}	-	-	23			
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}	-	-	2.0	V	$I_S=9.0A, V_{GS}=0V(\text{Note})$	
Reverse Recovery Time	t_{rr}	-	170	340	ns	$I_F=5.9A, di/dt=100A/\mu s(\text{Note})$	
Forward Turn-On Time	t_{on}	Intrinsic turn-on time is negligible and dominated by inductance L_S+L_D					
Thermal Resistance	Junction to Case	$R_{\theta JC}$	-	-	1.7	$^\circ\text{C/W}$	-
	Junction to Ambient	$R_{\theta JA}$	-	-	62		

Note: Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$

