isc N-Channel MOSFET Transistor IRF510

- **FEATURES**
- Low $R_{DS(on)}$
- V_{GS} Rated at ±20V
- Silicon Gate for Fast Switching Speed
- Low Drive Requirements
- Minimum Lot-to-Lot variations for robust device performance and reliable operation

- **DESCRIPTION**
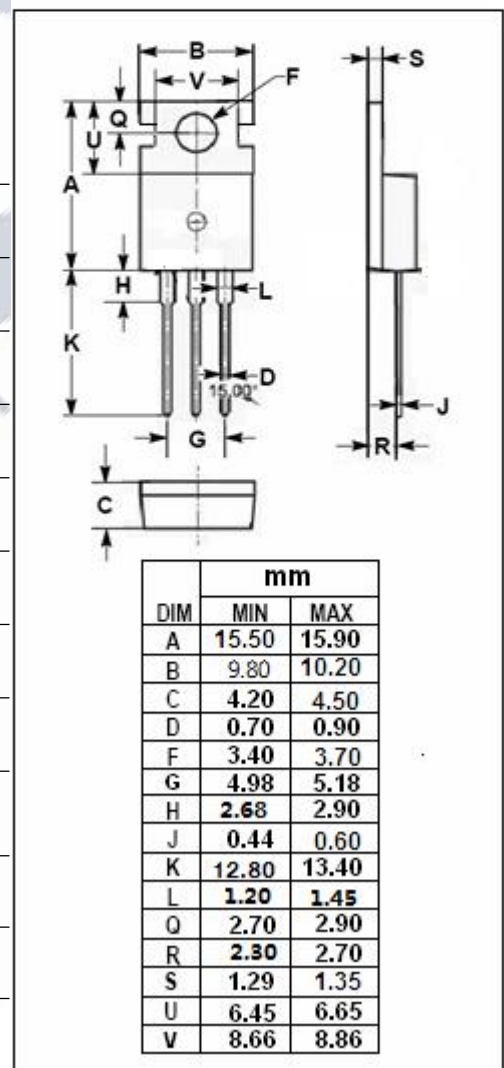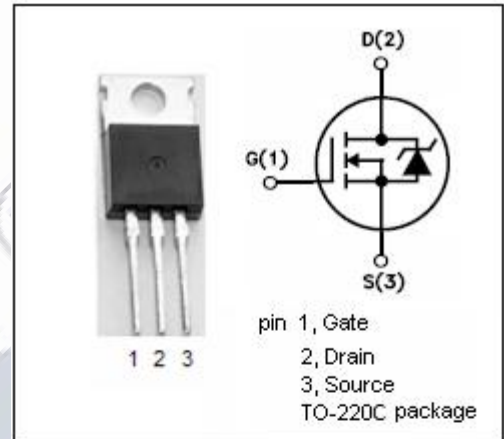- Designed especially for high voltage,high speed applications, such as off-line switching power supplies , UPS,AC and DC motor controls,relay and solenoid drivers.

pin 1, Gate
2, Drain
3, Source
TO-220C package

- **ABSOLUTE MAXIMUM RATINGS(T_a=25℃)**

SYMBOL	PARAMETER	VALUE	UNIT
V_{DSS}	Drain-Source Voltage	100	V
V_{GS}	Gate-Source Voltage-Continuous	±20	V
I_D	Drain Current-Continuous	5.6	A
I_{DM}	Drain Current-Single Plused	20	A
P_D	Total Dissipation @T_C=25℃	43	W
T_j	Max. Operating Junction Temperature	-55~175	℃
T_{stg}	Storage Temperature	-55~175	℃

- **THERMAL CHARACTERISTICS**

SYMBOL	PARAMETER	MAX	UNIT
$R_{th\,j-c}$	Thermal Resistance,Junction to Case	3.5	℃/W
$R_{th\,j-a}$	Thermal Resistance,Junction to Ambient	80	℃/W

	mm	
DIM	MIN	MAX
A	15.50	15.90
B	9.80	10.20
C	4.20	4.50
D	0.70	0.90
F	3.40	3.70
G	4.98	5.18
H	2.68	2.90
J	0.44	0.60
K	12.80	13.40
L	1.20	1.45
Q	2.70	2.90
R	2.30	2.70
S	1.29	1.35
U	6.45	6.65
V	8.66	8.86

isc N-Channel MOSFET Transistor   IRF510

ELECTRICAL CHARACTERISTICS

T$_C$=25℃ unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
V$_{(BR)DSS}$	Drain-Source Breakdown Voltage	V$_{GS}$= 0; I$_D$= 0.25mA	100			V
V$_{GS(th)}$	Gate Threshold Voltage	V$_{DS}$= V$_{GS}$; I$_D$= 0.25mA	2		4	V
R$_{DS(on)}$	Drain-Source On-Resistance	V$_{GS}$= 10V; I$_D$= 3.4A			0.54	Ω
I$_{GSS}$	Gate-Body Leakage Current	V$_{GS}$= ±20V;V$_{DS}$= 0			±500	nA
I$_{DSS}$	Zero Gate Voltage Drain Current	V$_{DS}$= 100V; V$_{GS}$=0			250	uA
V$_{SD}$	Forward On-Voltage	I$_S$= 5.6A; V$_{GS}$=0			2.5	V
Ciss	Input Capacitance	V$_{DS}$=25V,V$_{GS}$=0V, F=1.0MHz		135		pF
Coss	Output Capacitance			80		pF
Crss	Reverse Transfer Capacitance			20		pF

• SWITCHING CHARACTERISTICS (T$_C$=25℃)

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
Td(on)	Turn-on Delay Time	V$_{DD}$=50V,I$_D$=5.6A V$_{GS}$=10V,R$_{GEN}$=24Ω R$_{GS}$=24Ω		8	11	ns
Tr	Rise Time			25	36	ns
Td(off)	Turn-off Delay Time			15	21	ns
Tf	Fall Time			12	21	ns