

isc N-Channel Mosfet Transistor

IRF531

• FEATURES

- Low  $R_{DS(on)}$
- $V_{GS}$  Rated at  $\pm 20V$
- Silicon Gate for Fast Switching Speed
- Rugged
- Low Drive Requirements

• DESCRIPTION

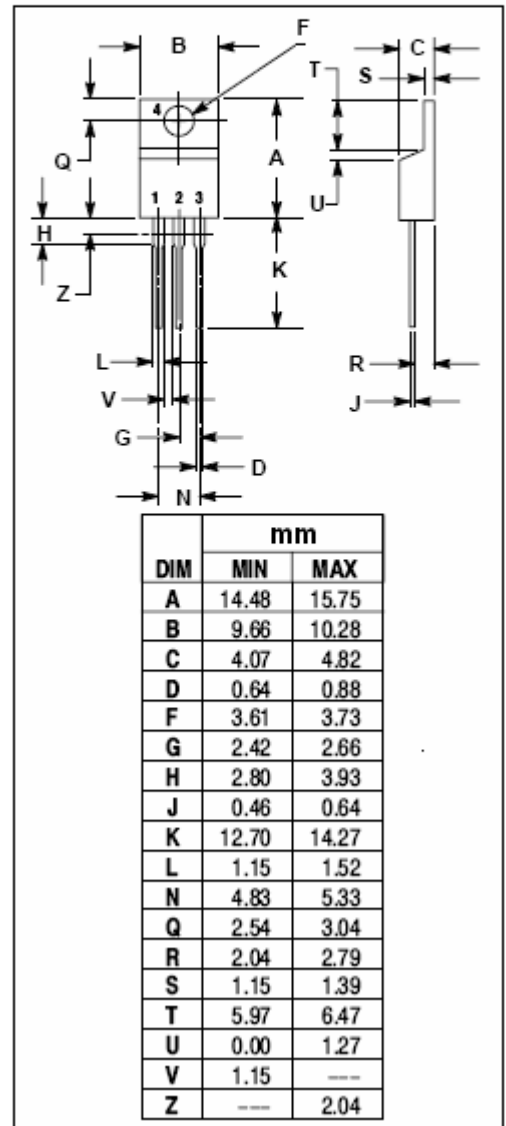
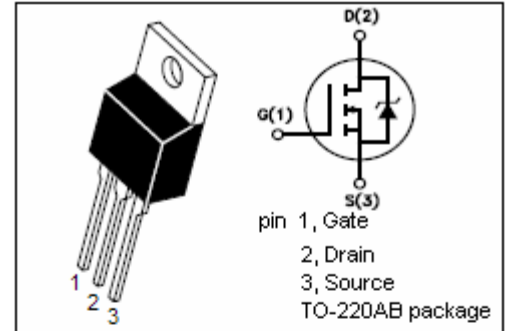
- Designed especially for high voltage,high speed applications, such as off-line switching power supplies , UPS,AC and DC motor controls,relay and solenoid drivers.

• ABSOLUTE MAXIMUM RATINGS( $T_a=25^{\circ}C$ )

SYMBOL	PARAMETER	VALUE	UNIT
$V_{DSS}$	Drain-Source Voltage	80	V
$V_{GS}$	Gate-Source Voltage-Continuous	$\pm 20$	V
$I_D$	Drain Current-Continuous	14	A
$I_{DM}$	Drain Current-Single Plused	56	A
$P_D$	Total Dissipation @ $T_C=25^{\circ}C$	79	W
$T_j$	Max. Operating Junction Temperature	-55~175	$^{\circ}C$
$T_{stg}$	Storage Temperature	-55~175	$^{\circ}C$

• THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	MAX	UNIT
$R_{th j-c}$	Thermal Resistance,Junction to Case	1.9	$^{\circ}C/W$
$R_{th j-a}$	Thermal Resistance,Junction to Ambient	80	$^{\circ}C/W$



**isc N-Channel Mosfet Transistor****IRF531****ELECTRICAL CHARACTERISTICS** $T_C=25^\circ\text{C}$  unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0; I_D=0.25\text{mA}$	80			V
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}; I_D=0.25\text{mA}$	2		4	V
$R_{DS(on)}$	Drain-Source On-Resistance	$V_{GS}=10\text{V}; I_D=8.3\text{A}$			0.18	$\Omega$
$I_{GSS}$	Gate-Body Leakage Current	$V_{GS}= \pm 20\text{V}; V_{DS}=0$			$\pm 500$	nA
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS}=80\text{V}; V_{GS}=0$			250	$\mu\text{A}$
$V_{SD}$	Forward On-Voltage	$I_S=14\text{A}; V_{GS}=0$			2.5	V
$C_{iss}$	Input Capacitance	$V_{DS}=25\text{V}, V_{GS}=0\text{V},$ $F=1.0\text{MHz}$		600		pF
$C_{oss}$	Output Capacitance			250		pF
$C_{rss}$	Reverse Transfer Capacitance			50		pF

**• SWITCHING CHARACTERISTICS ( $T_C=25^\circ\text{C}$ )**

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
$T_d(on)$	Turn-on Delay Time	$V_{DD}=50\text{V}, I_D=14\text{A}$ $V_{GS}=10\text{V}$ $R_{GS}=12\Omega$ $R_{GEN}=12\Omega$		12	15	ns
$T_r$	Rise Time			35	51	ns
$T_d(off)$	Turn-off Delay Time			25	35	ns
$T_f$	Fall Time			25	36	ns