

isc N-Channel MOSFET Transistor

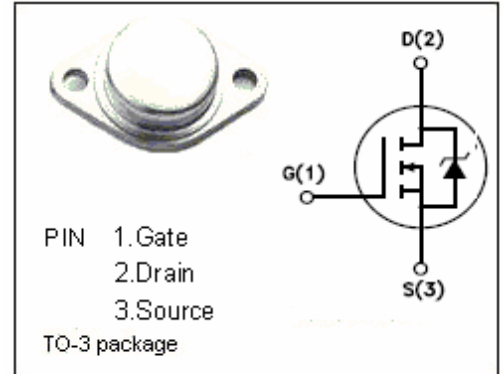
IRF442

DESCRIPTION

- V_{GS} Rated at $\pm 20V$
- Silicon Gate for Fast Switching Speeds
- $I_{DSS}, V_{DS(on)}, SOA$ and $V_{GS(th)}$ specified at Elevated temperature
- Rugged

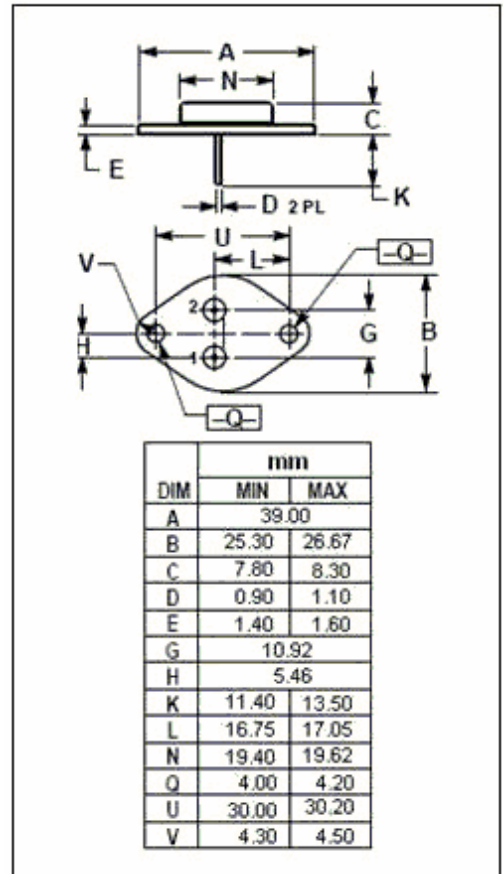
APPLICATIONS

- 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 ($V_{GS}=0$)	500	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Drain Current-continuous @ $TC=25^\circ C$	7.0	A
P_{tot}	Total Dissipation @ $TC=25^\circ C$	125	W
T_j	Max. Operating Junction Temperature	-55~150	$^\circ C$
T_{stg}	Storage Temperature Range	-55~150	$^\circ C$



THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	MAX	UNIT
$R_{th j-c}$	Thermal Resistance, Junction to Case	1.0	$^\circ C/W$
$R_{th j-A}$	Thermal Resistance, Junction to Ambient	30	$^\circ C/W$

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

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0; I_D=0.25\text{mA}$	500			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-stage Resistance	$V_{GS}=10\text{V}; I_D=4.4\text{A}$			1.10	Ω
I_{GSS}	Gate Source Leakage Current	$V_{GS}=\pm 20\text{V}; V_{DS}=0$			± 100	nA
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=500\text{V}; V_{GS}=0$			250	μA
V_{SD}	Diode Forward Voltage	$I_F=8\text{A}; V_{GS}=0$			2.0	V
C_{iss}	Input Capacitance	$V_{DS}=25\text{V}, V_{GS}=0\text{V}, F=1.0\text{MHz}$		1225	1600	pF
C_{oss}	Output Capacitance			200	350	pF
C_{rss}	Reverse Transfer Capacitance			85	150	pF

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

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
$T_d(\text{on})$	Turn-on Delay Time	$V_{DD}=250\text{V}, I_D=8\text{A}$ $V_{GS}=10\text{V}, R_{GEN}=9.1\Omega$ $R_{GS}=9.1\Omega$		15	21	ns
T_r	Rise Time			22	35	ns
$T_d(\text{off})$	Turn-off Delay Time			49	74	ns
T_f	Fall Time			20	30	ns