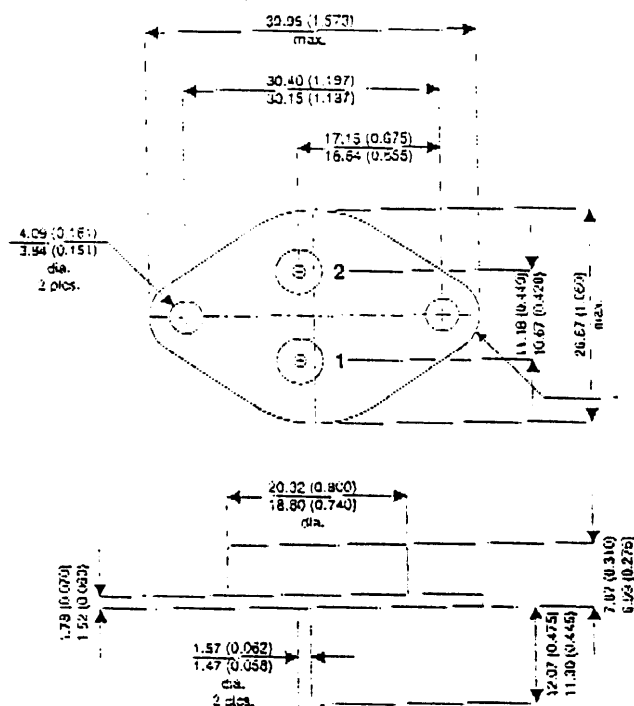


664-042

MECHANICAL DATA

Dimensions in mm (inches)



TO-3 Metal Package

Pin 1 - Gate

Pin 2 - Source

Case - Drain

N-CHANNEL POWER MOSFET

V_{DSS}	60V
$I_{D(cont)}$	44A
$R_{DS(on)}$	0.028 Ω

FEATURES

- HERMETICALLY SEALED TO-3 METAL PACKAGE
- SIMPLE DRIVE REQUIREMENTS
- SCREENING OPTIONS AVAILABLE

ABSOLUTE MAXIMUM RATINGS ($T_{case} = 25^{\circ}C$ unless otherwise stated)

V_{GS}	Gate - Source Voltage	$\pm 20V$
I_D	Continuous Drain Current ($V_{GS} = 0$, $T_{case} = 25^{\circ}C$)	44A
I_D	Continuous Drain Current ($V_{GS} = 0$, $T_{case} = 100^{\circ}C$)	27A
I_{DM}	Pulsed Drain Current ¹	176A
P_D	Power Dissipation @ $T_{case} = 25^{\circ}C$	125W
	Linear Derating Factor	1.0W/ $^{\circ}C$
E_{AS}	Single Pulse Avalanche Energy ²	340mJ
dv/dt	Peak Diode Recovery ³	4.5V/ns
T_J, T_{stg}	Operating and Storage Temperature Range	-55 to 150 $^{\circ}C$
T_L	Lead Temperature 1.6mm (0.063") from case for 10 sec.	300 $^{\circ}C$

Notes

- 1) Pulse Test: Pulse Width $\leq 300\mu s$, $\delta \leq 2\%$
- 2) @ $V_{DD} = 25V$, $L \geq 200\mu H$, $R_G = 25\Omega$, Peak $I_L = 44A$, Starting $T_J = 25^{\circ}C$
- 3) @ $I_{SD} \leq 44A$, $di/dt \leq 250A/\mu s$, $V_{DD} \leq BV_{DSS}$, $T_J \leq 150^{\circ}C$, Suggested $R_G = 9.1\Omega$

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IRF044

ELECTRICAL CHARACTERISTICS ($T_{\text{case}} = 25^{\circ}\text{C}$ unless otherwise stated)

Parameter		Test Conditions		Min.	Typ.	Max.	Unit
STATIC ELECTRICAL RATINGS							
BV _{DSS}	Drain – Source Breakdown Voltage	V _{GS} = 0	I _D = 1mA	60			V
ΔBV _{DSS} ΔT _J	Temperature Coefficient of Breakdown Voltage	Reference to 25°C I _D = 1mA			0.68		V/°C
R _{DS(on)}	Static Drain – Source On-State Resistance ¹	V _{GS} = 10V	I _D = 27A			0.028	Ω
		V _{GS} = 10V	I _D = 44A			0.032	
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS}	I _D = 250mA	2		4	V
g _{fs}	Forward Transconductance ¹	V _{DS} ≥ 15V	I _{DS} = 27A	17			S (Ω)
I _{DSS}	Zero Gate Voltage Drain Current	V _{GS} = 0	V _{DS} = 0.8BV _{DSS}			25	μA
			T _J = 125°C			250	
I _{GSS}	Forward Gate – Source Leakage	V _{GS} = 20V				100	nA
I _{GSS}	Reverse Gate – Source Leakage	V _{GS} = –20V				–100	
DYNAMIC CHARACTERISTICS							
C _{iss}	Input Capacitance	V _{GS} = 0			2400		pF
C _{oss}	Output Capacitance	V _{DS} = 25V			1100		
C _{rss}	Reverse Transfer Capacitance	f = 1MHz			230		
Q _g	Total Gate Charge	V _{GS} = 10V		39		88	nC
Q _{gs}	Gate – Source Charge	I _D = 44A		6.7		15	
Q _{gd}	Gate – Drain ("Miller") Charge	V _{DS} = 0.5BV _{DSS}		18		52	
t _{d(on)}	Turn-On Delay Time	V _{DD} = 30V I _D = 44A R _G = 9.1Ω				23	ns
t _r	Rise Time					130	
t _{d(off)}	Turn-Off Delay Time					81	
t _f	Fall Time					79	
SOURCE – DRAIN DIODE CHARACTERISTICS							
I _S	Continuous Source Current					44	A
I _{SM}	Pulse Source Current ²					176	
V _{SD}	Diode Forward Voltage ¹	I _S = 44A	T _J = 25°C			2.5	V
		V _{GS} = 0					
t _{rr}	Reverse Recovery Time	I _F = 44A	T _J = 25°C			220	ns
Q _{rr}	Reverse Recovery Charge ¹	d _i / d _t ≤ 100A/μs V _{DD} ≤ 50V				1.6	μC
t _{on}	Forward Turn-On Time			Negligible			
PACKAGE CHARACTERISTICS							
L _D	Internal Drain Inductance (measured from 6mm down drain lead to centre of die)				5.0		nH
L _S	Internal Source Inductance (from 6mm down source lead to source bond pad)				13		
THERMAL CHARACTERISTICS							
R _{θJC}	Thermal Resistance Junction – Case					1.0	°C/W
R _{θCS}	Thermal Resistance Case – Sink				0.12		
R _{θJA}	Thermal Resistance Junction – Ambient					30	

Notes

- 1) Pulse Test: Pulse Width $\leq 300\text{ms}$, $\delta \leq 2\%$
- 2) Repetitive Rating – Pulse width limited by maximum junction temperature.

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