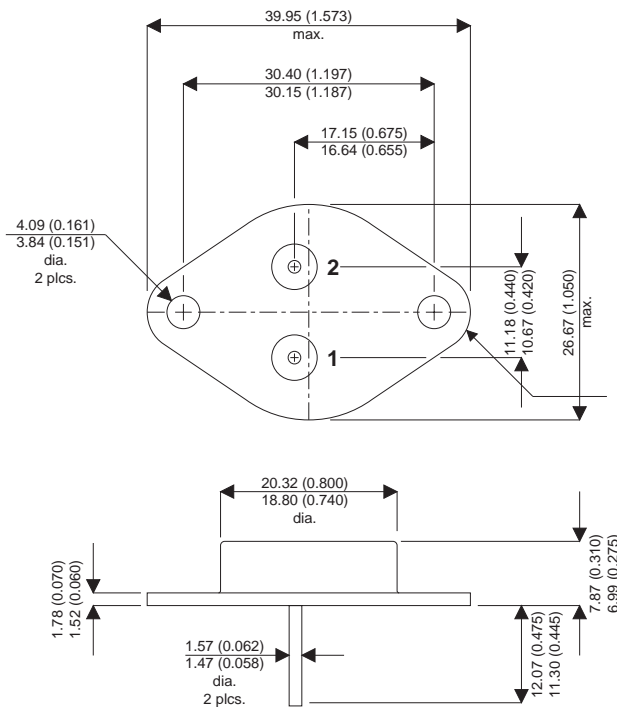


MECHANICAL DATA

Dimensions in mm (inches)



TO-3 Metal Package

Pin 1 – Gate Pin 2 – Source Case – Drain

**N-CHANNEL
POWER MOSFET**

V_{DSS} **100V**
 $I_{D(cont)}$ **38A**
 $R_{DS(on)}$ **0.055Ω**

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 ($V_{GS} = 0, T_{case} = 25^{\circ}C$)	38A
I_D	Continuous Drain Current ($V_{GS} = 0, T_{case} = 100^{\circ}C$)	24A
I_{DM}	Pulsed Drain Current ¹	152A
P_D	Power Dissipation @ $T_{case} = 25^{\circ}C$	150W
	Linear Derating Factor	1.2W/ $^{\circ}C$
E_{AS}	Single Pulse Avalanche Energy ²	150mJ
I_{AR}	Avalanche Current ²	38A
E_{AR}	Repetitive Avalanche Energy ²	15mJ
dv/dt	Peak Diode Recovery ³	5.5V/ns
T_J, T_{stg}	Operating and Storage Temperature Range	-55 to +150 $^{\circ}C$
T_L	Lead Temperature 1.6mm (0.63") from case for 10 sec.	300 $^{\circ}C$

Notes

- 1) Pulse Test: Pulse Width $\leq 300\mu s$, $\delta \leq 2\%$
- 2) @ $V_{DD} = 50V$, $L \geq 160\mu H$, $R_G = 25\Omega$, Peak $I_L = 38A$, Starting $T_J = 25^{\circ}C$
- 3) @ $I_{SD} \leq 38A$, $di/dt \leq 300A/\mu s$, $V_{DD} \leq BV_{DSS}$, $T_J \leq 150^{\circ}C$, Suggested $R_G = 2.35\Omega$

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

Parameter	Test Conditions	Min.	Typ.	Max.	Unit
STATIC ELECTRICAL RATINGS					
BV_{DSS} Drain – Source Breakdown Voltage	$V_{GS} = 0$ $I_D = 1mA$	100			V
$\Delta BV_{DSS} / \Delta T_J$ Temperature Coefficient of Breakdown Voltage	Reference to $25^{\circ}C$ $I_D = 1mA$		0.13		V/ $^{\circ}C$
$R_{DS(on)}$ Static Drain – Source On-State Resistance ¹	$V_{GS} = 10V$ $I_D = 24A$			0.055	Ω
	$V_{GS} = 10V$ $I_D = 38A$			0.065	
$V_{GS(th)}$ Gate Threshold Voltage	$V_{DS} = V_{GS}$ $I_D = 250mA$	2		4	V
g_{fs} Forward Transconductance ¹	$V_{DS} \geq 15V$ $I_{DS} = 24A$	9			S (\bar{O})
I_{DSS} Zero Gate Voltage Drain Current	$V_{GS} = 0$ $V_{DS} = 0.8BV_{DSS}$ $T_J = 125^{\circ}C$			25	μA
				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	$V_{GS} = 0$		3700		pF
C_{oss} Output Capacitance	$V_{DS} = 25V$		1100		
C_{riss} Reverse Transfer Capacitance	$f = 1MHz$		200		
Q_g Total Gate Charge	$V_{GS} = 10V$	50		125	nC
Q_{gs} Gate – Source Charge	$I_D = 38A$	8		22	
Q_{gd} Gate – Drain (“Miller”) Charge	$V_{DS} = 0.5BV_{DSS}$	25		65	
$t_{d(on)}$ Turn–On Delay Time	$V_{DD} = 50V$ $I_D = 38A$ $R_G = 2.35\Omega$			35	ns
t_r Rise Time				190	
$t_{d(off)}$ Turn–Off Delay Time				170	
t_f Fall Time				130	
SOURCE – DRAIN DIODE CHARACTERISTICS					
I_S Continuous Source Current				38	A
I_{SM} Pulse Source Current ²				152	
V_{SD} Diode Forward Voltage ¹	$I_S = 38A$ $T_J = 25^{\circ}C$ $V_{GS} = 0$			1.8	V
t_{rr} Reverse Recovery Time	$I_F = 38A$ $T_J = 25^{\circ}C$			500	ns
Q_{rr} Reverse Recovery Charge ¹	$d_i / d_t \leq 100A/\mu s$ $V_{DD} \leq 50V$			2.9	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					
$R_{\theta JC}$ Thermal Resistance Junction – Case				0.83	$^{\circ}C/W$
$R_{\theta CS}$ Thermal Resistance Case – Sink			0.12		
$R_{\theta JA}$ Thermal Resistance Junction – Ambient				30	

Notes

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

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