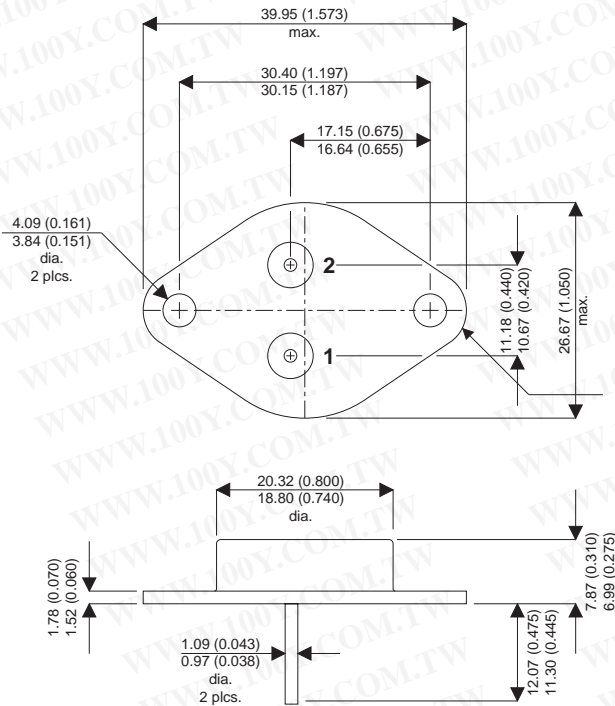


## MECHANICAL DATA

Dimensions in mm (inches)



### TO-3 Metal Package

Pin 1 – Gate      Pin 2 – Source      Case – Drain

## N-CHANNEL POWER MOSFET

$V_{DSS}$                     100V  
 $I_{D(cont)}$                 28A  
 $R_{DS(on)}$                 0.077 $\Omega$

### 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 ( $V_{GS} = 0, T_{case} = 25^{\circ}C$ )	28A
$I_D$	Continuous Drain Current ( $V_{GS} = 0, T_{case} = 100^{\circ}C$ )	20A
$I_{DM}$	Pulsed Drain Current <sup>1</sup>	112A
$P_D$	Power Dissipation @ $T_{case} = 25^{\circ}C$	125W
	Linear Derating Factor	1W/ $^{\circ}C$
$E_{AS}$	Single Pulse Avalanche Energy <sup>2</sup>	250mJ
$I_{AR}$	Avalanche Current <sup>2</sup>	28A
$E_{AR}$	Repetitive Avalanche Energy <sup>2</sup>	12.5mJ
$dv/dt$	Peak Diode Recovery <sup>3</sup>	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) @  $V_{DD} = 25V$ ,  $L \geq 480\mu H$ ,  $R_G = 25\Omega$ , Peak  $I_L = 28A$ , Starting  $T_J = 25^{\circ}C$
- 3) @  $I_{SD} \leq 28A$ ,  $di/dt \leq 170A/\mu s$ ,  $V_{DD} \leq BV_{DSS}$ ,  $T_J \leq 150^{\circ}C$ , Suggested  $R_G = 9.1\Omega$

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

Parameter	Test Conditions	Min.	Typ.	Max.	Unit
<b>STATIC ELECTRICAL RATINGS</b>					
$BV_{DSS}$	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 <sup>1</sup>	$V_{GS} = 10V$ $I_D = 20A$		0.077	$\Omega$
		$V_{GS} = 10V$ $I_D = 28A$		0.089	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}$ $I_D = 250mA$	2	4	V
$g_{fs}$	Forward Transconductance <sup>1</sup>	$V_{DS} \geq 15V$ $I_{DS} = 20A$	9.1		S ( $\bar{O}$ )
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{GS} = 0$ $V_{DS} = 0.8BV_{DSS}$ $T_J = 125^{\circ}C$		25	$\mu A$
				250	
$I_{GSS}$	Forward Gate – Source Leakage	$V_{GS} = 20V$		100	nA
$I_{GSS}$	Reverse Gate – Source Leakage	$V_{GS} = -20V$		-100	
<b>DYNAMIC CHARACTERISTICS</b>					
$C_{iss}$	Input Capacitance	$V_{GS} = 0$		1660	pF
$C_{oss}$	Output Capacitance	$V_{DS} = 25V$		550	
$C_{riss}$	Reverse Transfer Capacitance	$f = 1MHz$		120	
$Q_g$	Total Gate Charge	$V_{GS} = 10V$	30	59	nC
$Q_{gs}$	Gate – Source Charge	$I_D = 28A$	2.4	12	
$Q_{gd}$	Gate – Drain (“Miller”) Charge	$V_{DS} = 0.5BV_{DSS}$	12	30.7	
$t_{d(on)}$	Turn-On Delay Time	$V_{DD} = 50V$ $I_D = 28A$ $R_G = 9.1\Omega$		21	ns
$t_r$	Rise Time			145	
$t_{d(off)}$	Turn-Off Delay Time			21	
$t_f$	Fall Time			105	
<b>SOURCE – DRAIN DIODE CHARACTERISTICS</b>					
$I_S$	Continuous Source Current			28	A
$I_{SM}$	Pulse Source Current <sup>2</sup>			112	
$V_{SD}$	Diode Forward Voltage <sup>1</sup>	$I_S = 28A$ $T_J = 25^{\circ}C$ $V_{GS} = 0$		1.5	V
$t_{rr}$	Reverse Recovery Time	$I_F = 28A$ $T_J = 25^{\circ}C$		400	ns
$Q_{rr}$	Reverse Recovery Charge <sup>1</sup>	$d_i / d_t \leq 100A/\mu s$ $V_{DD} \leq 50V$		2.9	$\mu C$
$t_{on}$	Forward Turn-On Time		Negligible		
<b>PACKAGE CHARACTERISTICS</b>					
$L_D$	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		
<b>THERMAL CHARACTERISTICS</b>					
$R_{\theta JC}$	Thermal Resistance Junction – Case			1.67	$^{\circ}C/W$
$R_{\theta CS}$	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.