SEME LAB

MECHANICAL DATA
Dimensions in mm (inches)

10.41 (0.410)
10.67 (0.420)

4.83 (0.190)
5.08 (0.200)

0.89 (0.035)
1.14 (0.045)

3.56 (0.140) Dia.
3.81 (0.150)

16.38 (0.645)
16.89 (0.665)

13.38 (0.527)
13.64 (0.537)

10.41 (0.410)
10.92 (0.430)

1 2 3

12.07 (0.500)
19.05 (0.750)

0.64 (0.025) Dia.
0.89 (0.035)

2.54 (0.100)
BSC

3.05 (0.120)
BSC
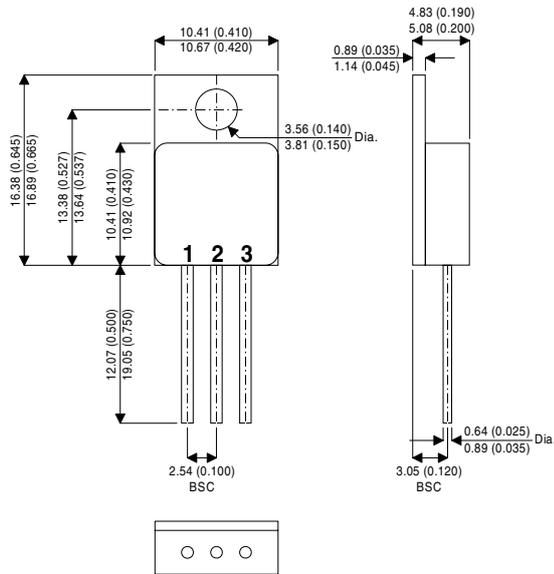
TO–257AA – Metal Package

Pad 1 – Gate   Pad 2 – Drain   Pad 3 – Source

N–CHANNEL POWER MOSFET FOR HI–REL APPLICATIONS

V_{DSS}	**500V**
$I_{D(cont)}$	**5.5A**
$R_{DS(on)}$	**0.85Ω**

FEATURES

- **HERMETICALLY SEALED TO257AA METAL PACKAGE**
- **SIMPLE DRIVE REQUIREMENTS**
- **LIGHTWEIGHT**
- **SCREENING OPTIONS AVAILABLE**
- **ALL LEADS ISOLATED FROM CASE**

ABSOLUTE MAXIMUM RATINGS (T_{case} = 25°C unless otherwise stated)

V_{GS}	Gate – Source Voltage	±20V
I_D	Continuous Drain Current @ T_{case} = 25°C	5.5A
I_D	Continuous Drain Current @ T_{case} = 100°C	3.5A
I_{DM}	Pulsed Drain Current	22A
P_D	Power Dissipation @ T_{case} = 25°C	60W
	Linear Derating Factor	0.48W/°C
T_J , T_{stg}	Operating and Storage Temperature Range	−55 to 150°C
$R_{\theta JC}$	Thermal Resistance Junction to Case	2.1°C/W max.
$R_{\theta JA}$	Thermal Resistance Junction to Ambient	80°C/W max.

SEME LAB

IRFY440-T257

ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise stated)

Parameter		Test Conditions		Min.	Typ.	Max.	Unit
STATIC ELECTRICAL RATINGS							
BV_{DSS}	Drain – Source Breakdown Voltage	$V_{GS} = 0$	$I_D = 1mA$	500			V
$\dfrac{\Delta BV_{DSS}}{\Delta T_J}$	Temperature Coefficient of Breakdown Voltage	Reference to 25°C $I_D = 1mA$			0.78		V/°C
$R_{DS(on)}$	Static Drain – Source On–State Resistance	$V_{GS} = 10V$	$I_D = 3.5A$			0.85	Ω
		$V_{GS} = 10V$	$I_D = 5.5A$			0.98	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}$	$I_D = 250\mu A$	2		4	V
g_{fs}	Forward Transconductance	$V_{DS} \geq 15V$	$I_{DS} = 3.5A$	4.7			S(℧)
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	$V_{GS} = 0$			1300		pF
C_{oss}	Output Capacitance	$V_{DS} = 25V$			310		
C_{rss}	Reverse Transfer Capacitance	f = 1MHz			120		
Q_g	Total Gate Charge	$V_{GS} = 10V$ $\quad I_D = 5.5A$ $V_{DS} = 0.5BV_{DSS}$		27.3		68.5	nC
Q_{gs}	Gate – Source Charge	$I_D = 5.5A$		2		12.5	nC
Q_{gd}	Gate – Drain ("Miller") Charge	$V_{DS} = 0.5BV_{DSS}$		11.1		42.4	
$t_{d(on)}$	Turn–On Delay Time	$V_{DD} = 250V$ $I_D = 5.5A$ $R_G = 9.1\Omega$				21	ns
t_r	Rise Time					73	
$t_{d(off)}$	Turn–Off Delay Time					72	
t_f	Fall Time					51	
SOURCE – DRAIN DIODE CHARACTERISTICS							
I_S	Continuous Source Current					5.5	A
I_{SM}	Pulse Source Current					22	
V_{SD}	Diode Forward Voltage	$I_S = 5.5A$ $\quad T_J = 25°C$ $V_{GS} = 0$				1.5	V
t_{rr}	Reverse Recovery Time	$I_S = 5.5A$ $\quad T_J = 25°C$				700	ns
Q_{rr}	Reverse Recovery Charge	$d_i / d_t \leq 100A/\mu s$ $V_{DD} \leq 50V$				8.9	μC
PACKAGE CHARACTERISTICS							
L_D	Internal Drain Inductance (from 6mm down drain lead pad to centre of die)				8.7		nH
L_S	Internal Source Inductance (from 6mm down source lead to centre of source bond pad)				8.7		