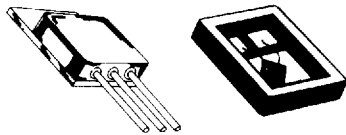
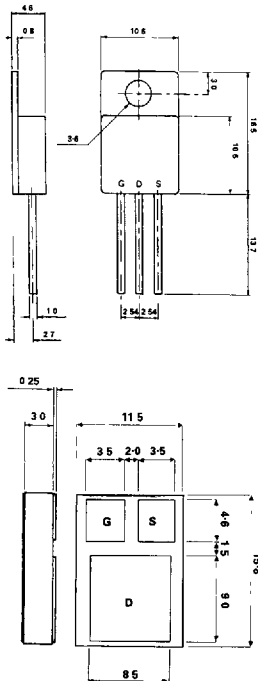


SEMELAB PLC


T-39-11
SEMELAB
IRFY220

MECHANICAL DATA

Dimensions in mm



HERMETICALLY SEALED N-CHANNEL POWER MOSFET FOR HI-REL APPLICATIONS

FEATURES

- HERMETIC TO220 METAL OR CERAMIC SURFACE MOUNT PACKAGES
- SCREENING OPTIONS AVAILABLE
- ALL LEADS ISOLATED FROM CASE
- $V_{DS} = 200V$
- $R_{DS(on)} = 0.8\Omega$
- $I_D = 5A$
- FAST SWITCHING
- LOW DRIVE CURRENT
- EXCELLENT TEMPERATURE STABILITY

APPLICATIONS

Include switching regulators, converters, motor drivers and inverters

G – Gate D – Drain S – Source

TO220M – TO220 Metal Package

TO220SM – TO220 Ceramic Surface Mount Package

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

V_{DS}	Drain source voltage	200V
V_{GS}	Gate source voltage	$\pm 20V$
V_{DGR}	Drain-gate voltage ($R_{GS} = 20K\Omega$)	200V
I_D	Drain current continuous @ $T_C = 25^\circ C$	5A
I_D	Drain current continuous @ $T_C = 100^\circ C$	3A
I_{DM}^*	Drain current max.	40A
P_D	Power dissipation	40W
T_J	Maximum operating junction temperature	200°C
T_{stg}	Storage temperature	-55 to 200°C
	Linear derating factor	0.32W/°C

* Pulse test: pulse width = 300 μs , duty cycle = 2%

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

Parameter	Test Conditions	Min.	Typ.	Max.	Unit
BV_{DSS} Drain source breakdown voltage	$V_{GS} = 0V$ $I_D = 250\mu A$	200			V
$V_{GS(th)}$ Gate threshold voltage	$V_{DS} = V_{GS}$ $I_D = 250\mu A$	2.0		4.0	V
I_{GSSF} Gate-source leakage forward	$V_{GS} = 20V$			100	nA
I_{GSSR} Gate-source leakage reverse	$V_{GS} = -20V$			-100	nA
I_{DSS} Zero gate voltage drain current	$V_{DS} = \text{Max. rating}$ $V_{GS} = 0V$			250	μA
$I_{D(on)*}$ On state drain current	$V_{DS} > I_{D(on)*} \times R_{DS(on)max}$ $V_{GS} = 10V$	5.0			A
$R_{DS(on)*}$ Static drain source on state resistance	$V_{GS} = 10V$ $I_D = 2.5A$	0.5	0.8		Ω
g_{fs*} Forward transconductance	$V_{DS} > I_{D(on)*} \times R_{DS(on)max}$ $I_D = 2.5A$	1.3	2.5		S
C_{iss} Input capacitance	$V_{GS(on)} = 0V$ $V_{DS} = 25V$ $f = 1.0\text{MHz}$	450	600		pf
C_{oss} Output capacitance		150	300		pf
C_{rss} Reverse transfer capacitance		40	80		pf
$t_{d(on)}$ Turn-on delay time	$V_{DD} = 100V$ $I_D = 2.5A$ $Z_0 = 50\Omega$	20	40		ns
t_r Rise time		30	60		ns
$t_{d(off)}$ Turn-off delay time		50	100		ns
t_f Fall time		30	60		ns

SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS

I_S Continuous source current		5.0	A
I_{SM}^* Pulse source current		20	A
V_{SD}^* Diode forward voltage	$T_c = 25^{\circ}\text{C}$ $I_S = 5A$ $V_{GS} = 0V$	2.0	V
Q_{RR} Reverse recovered charge	$T_J = 150^{\circ}\text{C}$ $I_f = 5A$ $dI_f/dt = 100A/\mu s$	2.3	μC
t_{rr} Reverse recovery time	$T_J = 150^{\circ}\text{C}$ $I_f = 5A$ $dI_f/dt = 100A/\mu s$	350	ns

* Pulsed: pulse width = $300\mu s$, duty cycle = 2%**THERMAL RESISTANCE** (TO220 metal case)

$R_{th(j-c)}$ Junction to case		3.12	$^{\circ}\text{C/W}$
$R_{th(j-a)}$ Junction to ambient	Free air operation	30	$^{\circ}\text{C/W}$