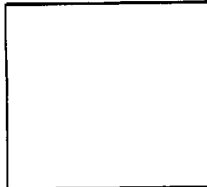


**International**  
**Rectifier**

PROVISIONAL

**IRFK6H/J054****Isolated Base Power HEX-pak™****Assembly - Parallel Chip**

- High Current Capability.
- UL recognized E78996.
- Electrically Isolated Base Plate.
- Easy Assembly into Equipment.



$V_{DS} = 60V$
$R_{DS(on)} = 3.3m\Omega$
$I_D = 350A$

**Description**

The HEX-pak™ utilizes the well-proven HEXFET™ transistor die, combining low on-state resistance with high transconductance. These superior technology die are assembled by state of the art techniques into the TO-240 package, featuring 2.5kV rms isolation and solid M5 screw connections. The small footprint means the package is highly suited to power applications where space is a premium. Available in two versions, IRFK.H... for fast switching and IRFK.J... for oscillation sensitive applications.

**Absolute Maximum Ratings**

	Parameter	Max.	Units
$I_D @ T_C = 25^\circ C$	Continuous Drain Current, $V_{GS} @ 10V @$	350	A
$I_D @ T_C = 100^\circ C$	Continuous Drain Current, $V_{GS} @ 10V @$	220	
$I_{DM}$	Pulsed Drain Current @	1400	
	Linear Derating Factor	5.0	W/°C
$P_D @ T_C = 25^\circ C$	Power Dissipation	525	W
$V_{GS}$	Gate-to-Source Voltage	±20	V
$V_{IN}$	R.M.S. Isolation Voltage, Circuit to Base (1 Minute)	2.5	kV
$T_J$ $T_{STG}$	Operating Junction and Storage Temperature Range	-40 to 150	°C

**Thermal Resistance**

	Parameter	Min.	Typ.	Max.	Units
$R_{\theta JC}$	Junction-to-Case	—	—	0.20	°C/W
$R_{\theta CS}$	Case-to-Sink, Flat, Greased Surface	—	0.10	—	
T	Mounting torque +10%, M5 Screw @	—	5.0	—	Nm
	Busbar to HEXPAK with M5 Screw	—	3.0	—	
wt	Approximate Weight	—	140 (5.0)	—	g (oz)


# IRFK6H/J054



## Electrical Characteristics @ $T_J = 25^\circ\text{C}$ (unless otherwise specified)

Parameter	Min.	Typ.	Max.	Units	Conditions	
$V_{(BR)DSS}$	60	—	—	V	$V_{GS} = 0\text{V}$ , $I_D = 1.0\text{mA}$	
$R_{DS(ON)}$	—	2.2	3.3	m $\Omega$	$V_{DS} = 10\text{V}$ , $I_D = 110\text{A}$ ⓐ	
$I_{D(ON)}$	150	—	—	A	$V_{DS} > I_{D(ON)} \times R_{DS(ON)}/\text{max}$ , $V_{GS} = 10\text{V}$	
$V_{GS(th)}$	2.0	—	4.0	V	$V_{DS} = V_{GS}$ , $I_D = 1.0\text{mA}$	
$g_{fs}$	186	282	—	S	$V_{DS} = 50\text{V}$ , $I_D = 225\text{A}$	
$I_{DSS}$	Drain-to-Source Leakage Current	—	1.5	—	$V_{DS} = 60\text{V}$ , $V_{GS} = 0\text{V}$	
		—	6.0	—	$V_{DS} = 48\text{V}$ , $V_{GS} = 0\text{V}$ , $T_J = 125^\circ\text{C}$	
$I_{GSS}$	Gate-to-Source Forward Leakage	—	600	—	$V_{GS} = 20\text{V}$	
		—	-600	—	$V_{GS} = -20\text{V}$	
$Q_g$	Total Gate Charge	—	780	900	$I_D = 225\text{A}$	
$Q_{gs}$	Gate-to-Source Charge	—	150	220	$V_{DS} = 48\text{V}$	
$Q_{gd}$	Gate-to-Drain ("Miller") Charge	—	270	400	$V_{GS} = 10\text{V}$ ⓑ	
$t_{(ON)}$	Turn-On Delay Time	IRFK6H054	—	110	—	$V_{DD} = 25\text{V}$ $I_D = 225\text{A}$ $V_{GS} = 10\text{V}$ $R_{\theta} = 3.3\Omega$ ⓑ
		IRFK6J054	—	125	—	
$t_r$	Rise Time	IRFK6H054	—	700	—	
		IRFK6J054	—	800	—	
$t_{(OFF)}$	Turn-Off Delay Time	IRFK6H054	—	400	—	
		IRFK6J054	—	530	—	
$t_f$	Fall Time	IRFK6H054	—	300	—	
$L_{DS}$	Drain Inductance to Source	—	18	—	nH	
$C_{iss}$	Input Capacitance	—	14	—	nF	
$C_{oss}$	Output Capacitance	—	2.5	—	nF	
$C_{rss}$	Reverse Transfer Capacitance	—	0.75	—	nF	
					$f = 1.0\text{MHz}$	

## Source-Drain Ratings and Characteristics

Parameter	Min.	Typ.	Max.	Units	Conditions
$I_S$	—	—	300	A	Modified MOSFET symbol showing the integral reverse p-n junction diode. 
$I_{SM}$	—	—	100	A	
$V_{SD}$	—	—	2.5	V	$T_J = 25^\circ\text{C}$ , $I_S = 225\text{A}$ , $V_{GS} = 0\text{V}$ ⓐ
$t_{rr}$	71	150	320	ns	$T_J = 25^\circ\text{C}$ , $I_S = 225\text{A}$
$Q_{rr}$	4.4	10	23	$\mu\text{C}$	$di/dt = 400\text{A}/\mu\text{s}$ ⓑ

### Notes:

- ⓐ Repetitive rating; pulse width limited by maximum junction temperature.
- ⓑ A mounting compound is recommended and the torque should be rechecked after a period of three hours to allow for the spread of the compound.
- ⓒ Limited by package to 200 amperes maximum continuous current.
- ⓓ Pulse width  $\leq 300\mu\text{s}$ ; duty cycle  $\leq 2\%$ .



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