

# Silicon N-MOSFET Transistor

## **IRF530**

100V / 14A

# DATASHEET

OEM – RCA

Source: RCA Databook MOSFET 1984

IRF130-133, IRF251-253, IRF420-423,  
IRF510-513, IRF520-523, IRF530-533

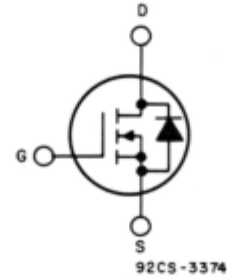
File Number **1469**

## N-Channel Enhancement-Mode Silicon Gate Power Field-Effect Transistors

3.5-14 A, 60-500 V

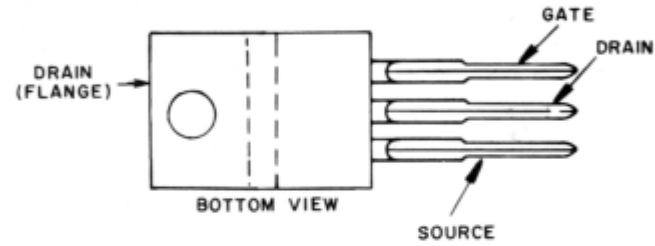
**Features:**

- Silicon gate for fast switching speeds - specified switching times at elevated temperatures
- Rugged - SOA is power-dissipation limited
- Low drive requirement,  $V_{GS(th)} = 4\text{ V (max.)}$



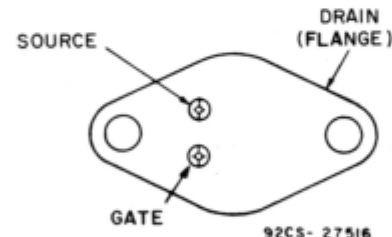
**N-CHANNEL ENHANCEMENT MODE**

**TERMINAL DESIGNATIONS**



**JEDEC TO-220AB**

The n-channel enhancement-mode silicon-gate power field-effect transistors are designed for high-voltage, high-speed power-switching applications, such as line-operated switching regulators, converters, solenoid and relay drivers.



**JEDEC TO-204AE, AA**

**MAXIMUM RATINGS, Absolute-Maximum Values ( $T_c = 25^\circ\text{C}$ ):**

DRAIN-SOURCE VOLTAGE	$V_{DSS}$	See Table 2, TO-204AA, AE	V
		See Table 3, TO-220AB	V
GATE-SOURCE VOLTAGE	$V_{GS}$	$\pm 20$	V
DRAIN CURRENT	$I_D$	See Table 2, TO-204AA, AE	A
		See Table 3, TO-220AB	A
POWER DISSIPATION @ $T_c = 25^\circ\text{C}$	$P_T$	See Table 2, TO-204AA, AE	W
		See Table 3, TO-220AB	W
Derate above $T_c = 25^\circ\text{C}$		See Table 2, TO-204AA, AE	W/ $^\circ\text{C}$
		See Table 3, TO-220AB	W/ $^\circ\text{C}$
OPERATING AND STORAGE TEMPERATURE	$T_j, T_{stg}$	-55 to +150	$^\circ\text{C}$

**THERMAL CHARACTERISTICS**

THERMAL RESISTANCE (Junction-to-Case)	$R_{\theta JC}$	See Table 2, TO-204AA, AE	$^\circ\text{C/W}$
		See Table 3, TO-220AB	$^\circ\text{C/W}$
MAXIMUM LEAD TEMPERATURE FOR SOLDERING PURPOSES, 1/8 in. from case for 5 seconds	$T_L$	275	$^\circ\text{C}$

**IRF130-133, IRF251-253, IRF420-423,  
IRF510-513, IRF520-523, IRF530-533**

**Table 2 - TO-204AA, AE (Formerly TO-3)**

Device	MAXIMUM RATINGS					ELECTRICAL CHARACTERISTICS							
	V <sub>DSS</sub> (Volts)	I <sub>D</sub> (Amp)	P <sub>T</sub> (Watts)	Derating Factor W/°C	R <sub>θJC</sub> °C/W	r <sub>DS(on)</sub> (Ohm) @ Max.	I <sub>D</sub> (Amp)	V <sub>GS(th)</sub> (Volts) Min./Max.	g <sub>fs</sub> (mho) Min.	t <sub>on</sub> (ns) Typ.	t <sub>off</sub> (ns) @ Typ.	I <sub>D</sub> (Amp)	
IRF130	100	14	75	0.6	1.67	0.18	8	2/4	4	115	130	8	
IRF131	60												
IRF132	100	12				0.25							
IRF133	60												
IRF251	150	30	150	1.2	0.833	.085	15		8	500	550	15	
IRF253	150	25				.120							
IRF420	500	2.5	40	0.32	3.12	3.0	1.5		1	105	210	1.5	
IRF421	450												
IRF422	500	2.0											0.25
IRF423	450												

\* 60 mil leads

**Table 3 - TO-220AB**

Device	MAXIMUM RATINGS					ELECTRICAL CHARACTERISTICS							
	V <sub>DSS</sub> (Volts)	I <sub>D</sub> (Amp)	P <sub>T</sub> (Watts)	Derating Factor W/°C	R <sub>θJC</sub> °C/W	r <sub>DS(on)</sub> (Ohm) @ Max.	I <sub>D</sub> (Amp)	V <sub>GS(th)</sub> (Volts) Min./Max.	g <sub>fs</sub> (mho) Min.	t <sub>on</sub> (ns) Typ.	t <sub>off</sub> (ns) @ Typ.	I <sub>D</sub> (Amp)	
IRF510	100	4	20	0.16	6.25	0.6	2	2/4	1	75	155	2	
IRF511	60												
IRF512	100	3.5				0.8							
IRF513	60												
IRF520	100	8	40	0.32	3.12	0.3	4		1.5	90	145	4	
IRF521	60												
IRF522	100	7				0.4							
IRF523	60												
IRF530	100	14	75	0.6	1.67	0.18	8			4	115	130	8
IRF531	60												
IRF532	100	12				0.25							
IRF533	60												