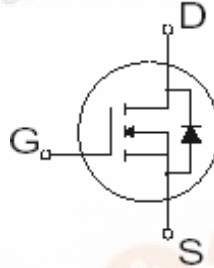


E 50N06

HEXFET[®] Power MOSFET

- Dynamic dv/dt Rating
- 175 °C Operating Temperature
- Fast switching
- Ease of Paralleling
- Simple Drive Requirements



$$V_{DSS} = 60V$$

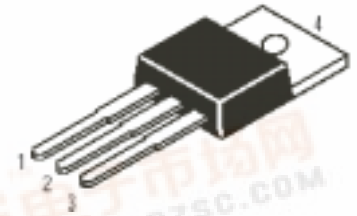
$$I_{D25} = 50A$$

$$R_{DS(ON)} = 0.022$$

Description

Third Generation HEXFETs from International Rectifier provide the designer with the best combination of fast switching, ruggedized device design, low on-resistance and cost-effectiveness.

The TO-220 package is universally preferred for all commercial-industrial applications at power dissipation levels to approximately 50watts. The low thermal resistance and low package cost of the TO-220 contribute to its wide acceptance throughout the industry.



Pin1-Gate

Pin2-Drain

Pin3-Source


Absolute Maximum Ratings

	Parameter	Max.	Units
$I_D@T_C=25^\circ C$	Continuous Drain Current, $V_{GS}@10V$	50*	A
$I_D@T_C=100^\circ C$	Continuous Drain Current, $V_{GS}@10V$	36	
I_{DM}	Pulsed Drain Current	200	
$P_D@T_C=25^\circ C$	Power Dissipation	140	W
	Linear Derating Factor	1.0	W/ °C
V_{GS}	Gate-to-Source Voltage	± 20	V
E_{AS}	Single Pulse Avalanche Energy	100	mJ
dv/dt	Peak Diode Recovery dv/dt	4.5	V/ns
T_J T_{STG}	Operating Junction and Storage Temperature Range	- 55 to +175	°C
	Soldering Temperature, for 10 seconds	300(1.6mm from case)	
	Mounting Torque,6-32 or M3 screw	10 lbf in(1.1N m)	

Thermal Resistance

	Parameter	Min.	Typ.	Max.	Units
$R_{\theta JC}$	Junction-to-case	—	—	1.0	°C/W
$R_{\theta CS}$	Case-to-Sink, Flat, Greased Surface	—	0.50	—	
$R_{\theta JA}$	Junction-to-Ambient	—	—	62	

Electrical Characteristics @T_J=25 °C(unless otherwise specified)

	Parameter	Min.	Typ.	Max.	Units	Test Conditions
V _{(BR)DSS}	Drain-to-Source Breakdown Voltage	60	—	—	V	V _{GS} =0V, I _D =250uA
V _{(BR)DSS} / T _J	Breakdown Voltage Temp. Coefficient	—	0.060	—	V/°C	Reference to 25°C, I _D =1mA
R _{DS(on)}	Static Drain-to-Source On-resistance	—	—	0.022		V _{GS} =10V, I _D =25A
V _{GS(th)}	Gate Threshold Voltage	2.0	—	4.0	V	V _{DS} =V _{GS} , I _D =250μA
g _{fs}	Forward Transconductance	17	—	—	S	V _{DS} =25V, I _D =25A
I _{DSS}	Drain-to-Source Leakage current	—	—	25	μA	V _{DS} =60V, V _{GS} =0V
		—	—	250		V _{DS} =48V, V _{GS} =0V, T _J =150°C
I _{GSS}	Gate-to-Source Forward leakage	—	—	100	nA	V _{GS} =20V
	Gate-to-Source Reverse leakage	—	—	-100		V _{GS} =-20V
Q _g	Total Gate Charge	—	—	67	nC	I _D =51A
Q _{gs}	Gate-to-Source charge	—	—	18		V _{DS} =48V
Q _{gd}	Gate-to-Drain ("Miller") charge	—	—	25		V _{GS} =10V See Fig.6 and 13
t _{d(on)}	Turn-on Delay Time	—	14	—	nS	V _{DD} =30V
t _r	Rise Time	—	110	—		I _D =51A
t _{d(off)}	Turn-Off Delay Time	—	45	—		R _G =9.1Ω
t _f	Fall Time	—	92	—		R _D =0.55Ω See Figure 10
L _D	Internal Drain Inductance	—	4.5	—	nH	Between lead, 6mm(0.25in.) from package and center of die contact
L _S	Internal Source Inductance	—	7.5	—		
C _{iss}	Input Capacitance	—	1900	—	pF	V _{GS} =0V
C _{oss}	Output Capacitance	—	920	—		V _{DS} =25V
C _{rss}	Reverse Transfer Capacitance	—	170	—		f=1.0MHz See Figure 5

Source-Drain Ratings and Characteristics

	Parameter	Min.	Typ.	Max.	Units	Test Conditions
I _S	Continuous Source Current (Body Diode)	—	—	50*	A	MOSFET symbol showing the integral reverse p-n junction diode.
I _{SM}	Pulsed Source Current (Body Diode)	—	—	200		
V _{SD}	Diode Forward Voltage	—	—	1.3	V	T _J =25°C, I _S =25A, V _{GS} =0V
t _{rr}	Reverse Recovery Time	—	120	180	nS	T _J =25°C, I _F =51A
Q _{rr}	Reverse Recovery Charge	—	0.53	0.80	μC	di/dt=100A/μs
t _{on}	Forward Turn-on Time	Intrinsic turn-on time is negligible (turn-on is dominated by L _S + L _D)				

Notes:

Repetitive rating; pulse width limited by
max. junction temperature(see figure 11)

V_{DD}=25V ,starting T_J=25 °C ,L=44μH

R_G=25 , I_{AS}=51A(see Figure 12)

I_{SD} 51A, di/dt 250A/μ S, V_{DD} V_{(BR)DSS},

T_J 175 °C

Pulse width 300 μ S; duty cycle 2%.