



# STP30NE06L STP30NE06LFP

N - CHANNEL 60V - 0.035  $\Omega$  - 30A - TO-220/TO-220FP  
STripFET™ POWER MOSFET

TYPE	V <sub>DSS</sub>	R <sub>DS(on)</sub>	I <sub>D</sub>
STP30NE06L	60 V	< 0.05 $\Omega$	30 A
STP30NE06LFP	60 V	< 0.05 $\Omega$	17 A

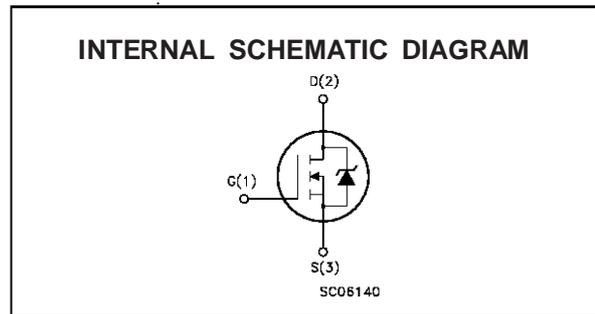
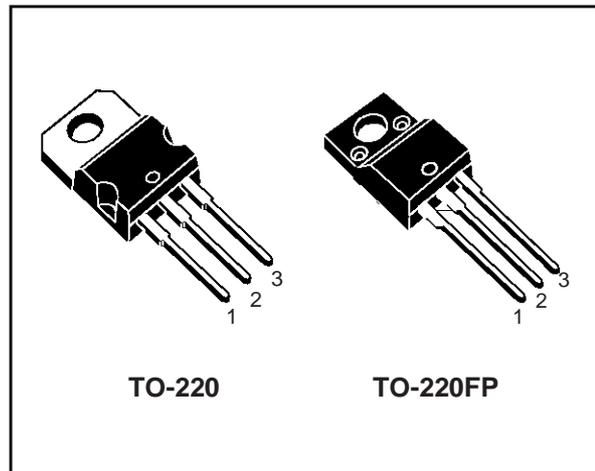
- TYPICAL R<sub>DS(on)</sub> = 0.035  $\Omega$
- 100% AVALANCHE TESTED
- LOW GATE CHARGE
- APPLICATION ORIENTED CHARACTERIZATION

### DESCRIPTION

This Power MOSFET is the latest development of STMicroelectronics unique "Single Feature Size™" strip-based process. The resulting transistor shows extremely high packing density for low on-resistance, rugged avalanche characteristics and less critical alignment steps therefore a remarkable manufacturing reproducibility.

### APPLICATIONS

- DC MOTOR CONTROL
- DC-DC & DC-AC CONVERTERS
- SYNCHRONOUS RECTIFICATION



### ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value		Unit
		STP30NE06L	STP30NE06LFP	
V <sub>DS</sub>	Drain-source Voltage (V <sub>GS</sub> = 0)	60		V
V <sub>DGR</sub>	Drain- gate Voltage (R <sub>GS</sub> = 20 k $\Omega$ )	60		V
V <sub>GS</sub>	Gate-source Voltage	$\pm$ 20		V
I <sub>D</sub>	Drain Current (continuous) at T <sub>c</sub> = 25 °C	30	17	A
I <sub>D</sub>	Drain Current (continuous) at T <sub>c</sub> = 100 °C	21	12	A
I <sub>DM</sub> (•)	Drain Current (pulsed)	120	68	A
P <sub>tot</sub>	Total Dissipation at T <sub>c</sub> = 25 °C	80	30	W
	Derating Factor	0.53	0.2	W/°C
V <sub>ISO</sub>	Insulation Withstand Voltage (DC)	—	2000	V
T <sub>stg</sub>	Storage Temperature	-65 to 175		°C
T <sub>j</sub>	Max. Operating Junction Temperature	175		°C

(•) Pulse width limited by safe operating area

# STP30NE06L/FP

## THERMAL DATA

			TO-220	TO-220FP	
R <sub>thj-case</sub>	Thermal Resistance Junction-case	Max	1.875	5	°C/W
R <sub>thj-amb</sub>	Thermal Resistance Junction-ambient	Max	62.5		°C/W
R <sub>thc-sink</sub>	Thermal Resistance Case-sink	Typ	0.5		°C/W
T <sub>l</sub>	Maximum Lead Temperature For Soldering Purpose		300		°C

## AVALANCHE CHARACTERISTICS

Symbol	Parameter	Max Value	Unit
I <sub>AR</sub>	Avalanche Current, Repetitive or Not-Repetitive (pulse width limited by T <sub>j</sub> max)	20	A
E <sub>AS</sub>	Single Pulse Avalanche Energy (starting T <sub>j</sub> = 25 °C, I <sub>D</sub> = I <sub>AR</sub> , V <sub>DD</sub> = 50 V)	100	mJ

## ELECTRICAL CHARACTERISTICS (T<sub>case</sub> = 25 °C unless otherwise specified)

OFF

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V <sub>(BR)DSS</sub>	Drain-source Breakdown Voltage	I <sub>D</sub> = 250 μA V <sub>GS</sub> = 0	60			V
I <sub>DSS</sub>	Zero Gate Voltage Drain Current (V <sub>GS</sub> = 0)	V <sub>DS</sub> = Max Rating V <sub>DS</sub> = Max Rating T <sub>c</sub> = 125 °C			1 10	μA μA
I <sub>GSS</sub>	Gate-body Leakage Current (V <sub>DS</sub> = 0)	V <sub>GS</sub> = ± 20 V			± 100	nA

ON (\*)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> = V <sub>GS</sub> I <sub>D</sub> = 250 μA	1	1.75	2.5	V
R <sub>DS(on)</sub>	Static Drain-source On Resistance	V <sub>GS</sub> = 5 V I <sub>D</sub> = 15 A V <sub>GS</sub> = 10 V I <sub>D</sub> = 15 A		0.045 0.035	0.06 0.05	Ω Ω
I <sub>D(on)</sub>	On State Drain Current	V <sub>DS</sub> > I <sub>D(on)</sub> × R <sub>DS(on)max</sub> V <sub>GS</sub> = 10 V	30			A

## DYNAMIC

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
g <sub>fs</sub> (*)	Forward Transconductance	V <sub>DS</sub> > I <sub>D(on)</sub> × R <sub>DS(on)max</sub> I <sub>D</sub> = 15 A	10	18		S
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> = 25 V f = 1 MHz V <sub>GS</sub> = 0		1350		pF
C <sub>oss</sub>	Output Capacitance			195		pF
C <sub>rss</sub>	Reverse Transfer Capacitance			58		pF