

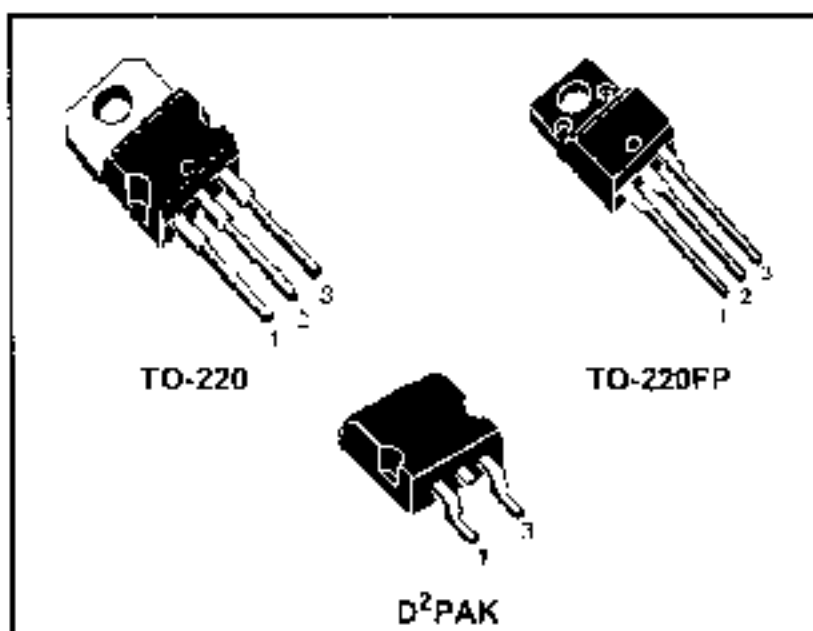


STP6NK60Z STP6NK60ZFP - STB6NK60Z

N-CHANNEL 600V - 1Ω - 6A TO-220/TO-220FP/D²PAK
Zener-Protected SuperMESH™ Power MOSFET

TYPE	V _{DSS}	R _{DS(on)}	I _D	P _w
STP6NK60Z	600 V	< 1.2 Ω	6 A	104 W
STP6NK60ZFP	600 V	< 1.2 Ω	6 A	32 W
STB6NK60Z	600 V	< 1.2 Ω	6 A	104 W

- TYPICAL R_{DS(on)} = 1 Ω
- EXTREMELY HIGH dv/dt CAPABILITY
- 100% AVALANCHE TESTED
- GATE CHARGE MINIMIZED
- VERY LOW INTRINSIC CAPACITANCES
- VERY GOOD MANUFACTURING REPEATABILITY



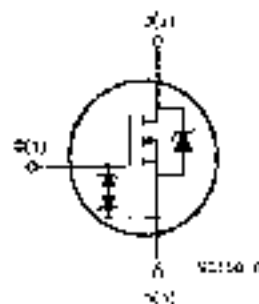
DESCRIPTION

The SuperMESH™ series is obtained through an extreme optimization of ST's well established strip-based PowerMESH™ layout. In addition to pushing on-resistance significantly down, special care is taken to ensure a very good dv/dt capability for the most demanding applications. Such series complements ST full range of high voltage MOSFETs including revolutionary MDmesh™ products.

APPLICATIONS

- HIGH CURRENT, HIGH SPEED SWITCHING
- IDEAL FOR OFF-LINE POWER SUPPLIES, ADAPTORS AND PFC
- LIGHTING

INTERNAL SCHEMATIC DIAGRAM



ORDERING INFORMATION

SALES TYPE	MARKING	PACKAGE	PACKAGING
STP6NK60Z	P6NK60Z	TO-220	TUBE
STP6NK60ZFP	P6NK60ZFP	TO-220FP	TUBE
STB6NK60ZT4	B6NK60Z	D ² PAK	TAP & REEL

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value		Unit
		STP6NK60Z STB6NK60Z	STP6NK60ZFP	
V _{DS}	Drain-source Voltage (V _{GS} = 0)	600		V
V _{DGR}	Drain-gate Voltage (R _{GS} = 20 kΩ)	600		V
V _{GS}	Gate-source Voltage	± 30		V
I _D	Drain Current (continuous) at T _C = 25°C	6	6 (*)	A
I _D	Drain Current (continuous) at T _C = 100°C	3.8	3.8 (*)	A
I _{DM} ()	Drain Current (pulsed)	24	24 (*)	A
P _{TOT}	Total Dissipation at T _C = 25°C	104	32	W
	Derating Factor	0.83	0.25	W/°C
V _{FSDIG-S}	Gate source ESD(HBM-C-100pF, R=1.5KΩ)	3500		V
dv/dt (1)	Peak Diode Recovery voltage slope	4.5		V/ns
V _{ISO}	Insulation Withstand Voltage (DC)	-	2500	V
T _J T _{stg}	Operating Junction Temperature Storage Temperature	-55 to 150 -55 to 150		°C °C

() Pulse width limited by safe operating area

(1) I_{SD} ≤ 6A, dv/dt ≤ 200A/μs, V_{OD} ≤ V_{(BR)DSS}, T_J ≤ T_{JMAX}

(*) Limited only by maximum temperature allowed

THERMAL DATA

		TO-220 / D ² PAK	TO-220FP	
R _{thj-case}	Thermal Resistance Junction-case Max	1.2	3.9	°C/W
R _{thj-amb}	Thermal Resistance Junction-ambient Max	62.5		°C/W
ti	Maximum Lead Temperature For Soldering Purpose	300		°C

AVALANCHE CHARACTERISTICS

Symbol	Parameter	Max Value	Unit
I _{AR}	Avalanche Current, Repetitive or Not-Repitative (pulse width limited by T _J max)	6	A
E _{AS}	Single Pulse Avalanche Energy (starting T _J = 25 °C, I _D = I _{AR} , V _{OD} = 50 V)	210	mJ

GATE-SOURCE ZENER DIODE

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
BV _{GSO}	Gate-Source Breakdown Voltage	I _{gs} = ± 1mA (Open Drain)	30			V

PROTECTION FEATURES OF GATE-TO-SOURCE ZENER DIODES

The built-in back-to-back Zener diodes have specifically been designed to enhance not only the device's ESD capability, but also to make them safely absorb possible voltage transients that may occasionally be applied from gate to source. In this respect the Zener voltage is appropriate to achieve an efficient and cost-effective intervention to protect the device's integrity. These integrated Zener diodes thus avoid the usage of external components.