

STB75NF75 STP75NF75 - STP75NF75FP

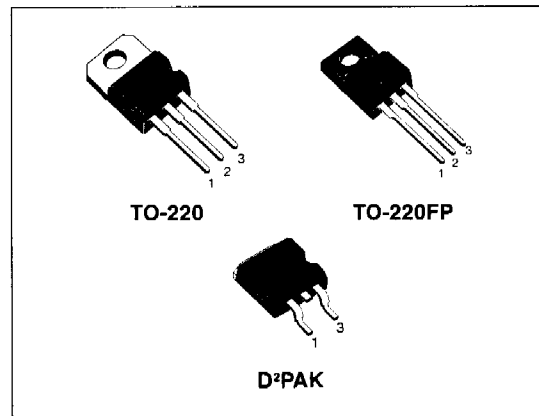
N-channel 75V - 0.0095Ω - 80A - TO-220 - TO-220FP - D²PAK
 STripFET™ II Power MOSFET

General features

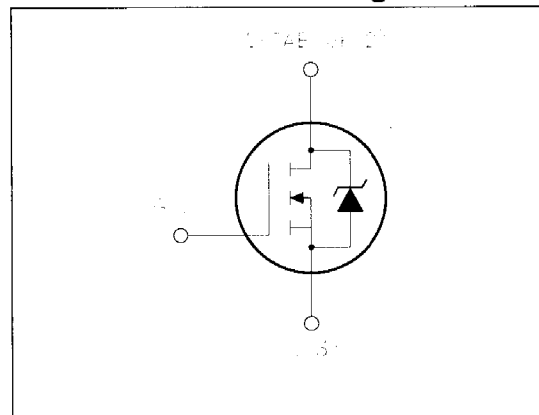
Type	V _{DSS}	R _{DS(on)}	I _D
STB75NF75	75V	<0.011Ω	80A ⁽¹⁾
STP75NF75	75V	<0.011Ω	80A ⁽¹⁾
STP75NF75FP	75V	<0.011Ω	80A ⁽¹⁾

1. Current limited by package

- Exceptional dv/dt capability
- 100% avalanche tested

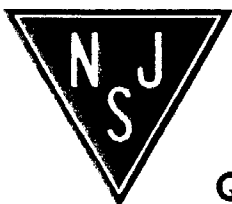


Internal schematic diagram



Applications

- Switching application



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Electrical ratings

Table 1. Absolute maximum ratings

Symbol	Parameter	Value		Unit
		D ² PAK /TO-220	TO-220FP	
V _{DS}	Drain-source voltage (V _{GS} = 0)	75		V
V _{DGR}	Drain-gate voltage (R _{GS} = 20KΩ)	75		V
V _{GS}	Gate-source voltage	± 20		V
I _D ⁽¹⁾	Drain current (continuous) at T _C = 25°C	80	80	A
I _D ⁽¹⁾	Drain current (continuous) at T _C = 100°C	70	70	A
I _{DM} ⁽²⁾	Drain current (pulsed)	320	320	A
P _{TOT}	Total dissipation at T _C = 25°C	300	45	W
	Derating factor	2.0	0.3	W/°C
dv/dt ⁽³⁾	Peak diode recovery voltage slope	12		V/ns
E _{AS} ⁽⁴⁾	Single pulse avalanche energy	700		mJ
V _{ISO}	Insulation withstand voltage (RMS) from all three leads to external heat sink (t = 1s; T _C = 25°C)	--	2000	V
T _J	Operating junction temperature	-55 to 175		°C
T _{stg}	Storage temperature			

1. Current limited by package
2. Pulse width limited by safe operating area
3. I_{SD} ≤ 30A, di/dt ≤ 300A/μs, V_{DD} ≤ V_{(BR)DSS}, T_J ≤ T_{JMAX}
4. Starting T_J = 25 °C, I_D = 40A, V_{DD} = 37.5V

Table 2. Thermal data

Symbol	Parameter	Value		Unit
		D ² PAK /TO-220	TO-220FP	
R _{thJC}	Thermal resistance junction-case max	0.5	3.33	°C/W
R _{thJA}	Thermal resistance junction-ambient max	62.5		°C/W
T _I	Maximum lead temperature for soldering purpose ⁽¹⁾	300		°C

1. 1.6mm from case for 10sec)

Electrical characteristics

($T_{CASE}=25^{\circ}C$ unless otherwise specified)

Table 3. On/off states

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
$V_{(BR)DSS}$	Drain-source breakdown voltage	$I_D = 250\mu A, V_{GS} = 0$	75			V
I_{DSS}	Zero gate voltage drain current ($V_{GS} = 0$)	$V_{DS} = \text{Max rating},$ $V_{DS} = \text{Max rating @ } 125^{\circ}C$			1 10	μA μA
I_{GSS}	Gate body leakage current ($V_{DS} = 0$)	$V_{GS} = \pm 20V$			± 100	nA
$V_{GS(th)}$	Gate threshold voltage	$V_{DS} = V_{GS}, I_D = 250\mu A$	2	3	4	V
$R_{DS(on)}$	Static drain-source on resistance	$V_{GS} = 10V, I_D = 40A$		0.0095	0.011	Ω

Table 4. Dynamic

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
$g_{fs}^{(1)}$	Forward transconductance	$V_{DS} = 15V, I_D = 40A$		20		S
C_{iss}	Input capacitance	$V_{DS} = 25V, f = 1 \text{ MHz},$ $V_{GS} = 0$		3700		pF
C_{oss}	Output capacitance			730		pF
C_{rss}	Reverse transfer capacitance			240		pF
Q_g	Total gate charge	$V_{DD} = 60V, I_D = 80A$ $V_{GS} = 10V$		117	160	nC
Q_{gs}	Gate-source charge			27		nC
Q_{gd}	Gate-drain charge			47		nC

1. Pulsed: pulse duration=300 μs , duty cycle 1.5%