

**N - CHANNEL ENHANCEMENT MODE  
POWER MOS TRANSISTOR**

ADVANCE DATA

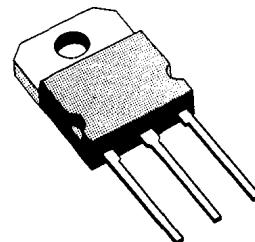
TYPE	V <sub>DSS</sub>	R <sub>DS(on)</sub>	I <sub>D</sub>
STHV82	800 V	2 Ω	5.5 A

- 800 V - HIGH VOLTAGE FOR OFF-LINE APPLICATIONS
- ULTRA FAST SWITCHING FOR OPERATION AT 100 KHz
- EASY DRIVE FOR REDUCED COST AND SIZE

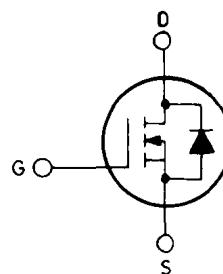
**INDUSTRIAL APPLICATIONS:**

- SWITCHING POWER SUPPLIES

N - channel enhancement mode POWER MOS field effect transistor. Easy drive and very fast switching times make this POWER MOS ideal for very high speed switching applications. It is ideal for off-line SMPS where a high breakdown voltage POWER MOS is required, particularly in single switch design such as flyback and forward converters.



TO-218

**INTERNAL SCHEMATIC  
DIAGRAM**

**ABSOLUTE MAXIMUM RATINGS**

V <sub>DS</sub>	Drain-source voltage (V <sub>GS</sub> = 0)	800	V
V <sub>GS</sub>	Gate-source voltage	±20	V
I <sub>D</sub>	Drain current (continuous) at T <sub>c</sub> = 25°C	5.5	A
I <sub>DM</sub>	Drain current (pulsed)	16	A
P <sub>tot</sub>	Total dissipation at T <sub>c</sub> < 25°C	125	W
	Derating factor	1	W/°C
T <sub>stg</sub>	Storage temperature	-65 to 150	°C
T <sub>j</sub>	Max. operating junction temperature	150	°C

## THERMAL DATA

$R_{thj\text{-case}}$ Thermal resistance junction-case	max	1	$^{\circ}\text{C/W}$
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ELECTRICAL CHARACTERISTICS ( $T_{\text{case}} = 25^{\circ}\text{C}$  unless otherwise specified)

Parameters	Test Conditions	Min.	Typ.	Max.	Unit
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## OFF

$V_{(\text{BR})\text{DSS}}$ Drain-source breakdown voltage	$I_D = 250 \mu\text{A}$ $V_{GS} = 0$	800			$\text{V}$
$I_{DSS}$ Zero gate voltage drain current ( $V_{GS} = 0$ )	$V_{DS} = \text{Max Rating}$ $V_{DS} = \text{Max Rating} \times 0.8 \quad T_c = 125^{\circ}\text{C}$			250 1000	$\mu\text{A}$ $\mu\text{A}$
$I_{GSS}$ Gate-body leakage current ( $V_{DS} = 0$ )	$V_{GS} = \pm 20 \text{ V}$			$\pm 100$	nA

## ON

$V_{GS\text{(th)}}$ Gate threshold voltage	$V_{DS} = V_{GS}$ $I_D = 250 \mu\text{A}$	2		4	$\text{V}$
$R_{DS\text{(on)}}$ Static drain-source on resistance	$V_{GS} = 10 \text{ V}$ $I_D = 2.5 \text{ A}$			2	$\Omega$

## DYNAMIC

$g_{fs}$ Forward transconductance	$V_{DS} = 25 \text{ V}$ $I_D = 2 \text{ A}$	2			mho
$C_{iss}$ $C_{oss}$ $C_{rss}$	$V_{DS} = 25 \text{ V}$ $f = 1 \text{ MHz}$ $V_{GS} = 0$		1000 150 90		pF pF pF

## SWITCHING

$t_d\text{(on)}$ $t_r$ $t_d\text{(off)}$ $t_f$	Turn-on time Rise time Turn-off delay time Fall time	$V_{DD} = 400 \text{ V}$ $R_{GS} = 50 \Omega$	$I_D = 2 \text{ A}$ $V_{GS} = 10 \text{ V}$	40 100 300 100	ns ns ns ns
$Q_g$	Total Gate Charge	$V_{DD} = 500 \text{ V}$ $V_{GS} = 10 \text{ V}$	$I_D = 6 \text{ A}$	70	nC

## ELECTRICAL CHARACTERISTICS (Continued)

Parameters	Test Conditions	Min.	Typ.	Max.	Unit
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## SOURCE DRAIN DIODE

I <sub>SD</sub> I <sub>SDM</sub>	Source-drain current Source-drain current (pulsed)			5.5 16	A A
V <sub>SD</sub>	Forward on voltage	I <sub>SD</sub> = 5.5 A	V <sub>GS</sub> = 0	1.4	V
t <sub>rr</sub>	Reverse recovery time			1000	ns
Q <sub>rr</sub>	Reverse recovery charge	I <sub>SD</sub> = 5.5 A	di/dt = 100A/ $\mu$ s	15	$\mu$ C