

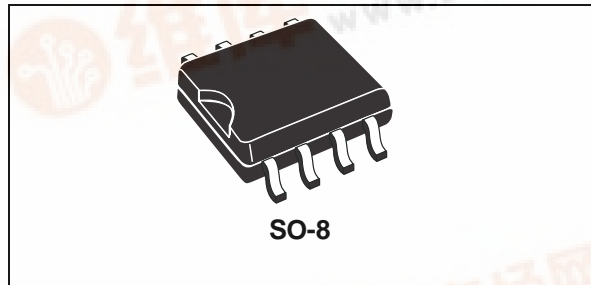


# STS3DPFS30

## STripFET™ P - CHANNEL 30V - 0.065Ω - 3A - SO-8 MOSFET PLUS SCHOTTKY RECTIFIER

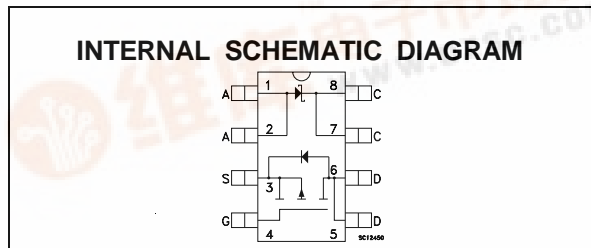
PRELIMINARY DATA

MAIN PRODUCT CHARACTERISTICS			
<b>MOSFET</b>	$V_{DSS}$	$R_{DS(on)}$	$I_D$
	30V	0.09Ω	3A
<b>SCHOTTKY</b>	$I_{F(AV)}$	$V_{RRM}$	$V_{F(MAX)}$
	3A	30V	0.51V



### DESCRIPTION:

This product associates the latest low voltage StripFET™ in p-channel version to a low drop Schottky diode. Such configuration is extremely versatile in implementing, a large variety of DC-DC converters for printers, portable equipment, and cellular phones.



### MOSFET ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
$V_{DS}$	Drain-source Voltage ( $V_{GS} = 0$ )	30	V
$V_{DGR}$	Drain- gate Voltage ( $R_{GS} = 20\text{ k}\Omega$ )	30	V
$V_{GS}$	Gate-source Voltage	$\pm 20$	V
$I_D$	Drain Current (continuous) at $T_c = 25\text{ }^\circ\text{C}$	3	A
$I_D$	Drain Current (continuous) at $T_c = 100\text{ }^\circ\text{C}$	1.9	A
$I_{DM}(\bullet)$	Drain Current (pulsed)	12	A
$P_{tot}$	Total Dissipation at $T_c = 25\text{ }^\circ\text{C}$	2	W

### SCHOTTKY ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit	
$V_{RRM}$	Repetitive Peak Reverse Voltage	30	V	
$I_{F(RMS)}$	RMS Forward Current	20	A	
$I_{F(AV)}$	Average Forward Current	$T_L=125\text{ }^\circ\text{C}$ $\delta=0.5$	3	A
$I_{FSM}$	Surge Non Repetitive Forward Current	$t_p=10\text{ ms}$ Sinusoidal	75	A
$I_{RRM}$	Repetitive Peak Reverse Current	$t_p=2\text{ }\mu\text{s}$ $F=1\text{ kHz}$	1	A
$I_{RSM}$	Non Repetitive Peak Reverse Current	$t_p=100\text{ }\mu\text{s}$	1	A
dv/dt	Critical Rate Of Rise Of Reverse Voltage	10000	V/ $\mu\text{s}$	

(●) Pulse width limited by safe operating area

Note: For the P-CHANNEL MOSFET actual polarity of voltages and current has to be reversed



## STS3DPFS30

### THERMAL DATA

R <sub>thj-amb</sub>	(*) Thermal Resistance Junction-ambient MOSFET	85	°C/W
R <sub>thj-amb</sub>	(*) Thermal Resistance Junction-ambient SCHOTTKY	100	°C/W
T <sub>stg</sub>	Storage Temperature Range	-65 to 150	°C
T <sub>j</sub>	Junction Temperature	150	°C
	(*) mounted on FR-4 board (steady state)		

### MOSFET 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	30			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	2	3	4	V
R <sub>DS(on)</sub>	Static Drain-source On Resistance	V <sub>GS</sub> = 10V I <sub>D</sub> = 1.5 A		0.065	0.09	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	3			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> = 1.5 A		5		S
C <sub>iSS</sub>	Input Capacitance	V <sub>DS</sub> = 25 V f = 1 MHz V <sub>GS</sub> = 0		1600		pF
C <sub>oSS</sub>	Output Capacitance			500		pF
C <sub>rSS</sub>	Reverse Transfer Capacitance			125		pF

**ELECTRICAL CHARACTERISTICS** (continued)

**SWITCHING ON**

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$t_{d(on)}$ $t_r$	Turn-on Delay Time Rise Time	$V_{DD} = 15\text{ V}$ $I_D = 1.5\text{ A}$ $R_G = 4.7\ \Omega$ $V_{GS} = 10\text{ V}$ (Resistive Load, see fig. 3)		15 29		ns ns
$Q_g$ $Q_{gs}$ $Q_{gd}$	Total Gate Charge Gate-Source Charge Gate-Drain Charge	$V_{DD} = 15\text{ V}$ $I_D = 3\text{ A}$ $V_{GS} = 10\text{ V}$		23 4.2 5.8	30	nC nC nC

**SWITCHING OFF**

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$t_{r(off)}$ $t_f$ $t_c$	Off-voltage Rise Time Fall Time Cross-over Time	$V_{clamp} = 24\text{ V}$ $I_D = 3\text{ A}$ $R_G = 4.7\ \Omega$ $V_{GS} = 10\text{ V}$ (Inductive Load, see fig. 5)		11 11 23		ns ns ns

**SOURCE DRAIN DIODE**

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$I_{SD}$ $I_{SDM}(\bullet)$	Source-drain Current Source-drain Current (pulsed)				3 12	A A
$V_{SD} (*)$	Forward On Voltage	$I_{SD} = 3\text{ A}$ $V_{GS} = 0$			2	V
$t_{rr}$ $Q_{rr}$ $I_{RRM}$	Reverse Recovery Time Reverse Recovery Charge Reverse Recovery Current	$I_{SD} = 3\text{ A}$ $di/dt = 100\text{ A}/\mu\text{s}$ $V_{DD} = 15\text{ V}$ $T_j = 150\text{ }^\circ\text{C}$ (see test circuit, figure 5)		34 45 2.6		ns nC A

(\*) Pulsed: Pulse duration = 300  $\mu\text{s}$ , duty cycle 1.5 %

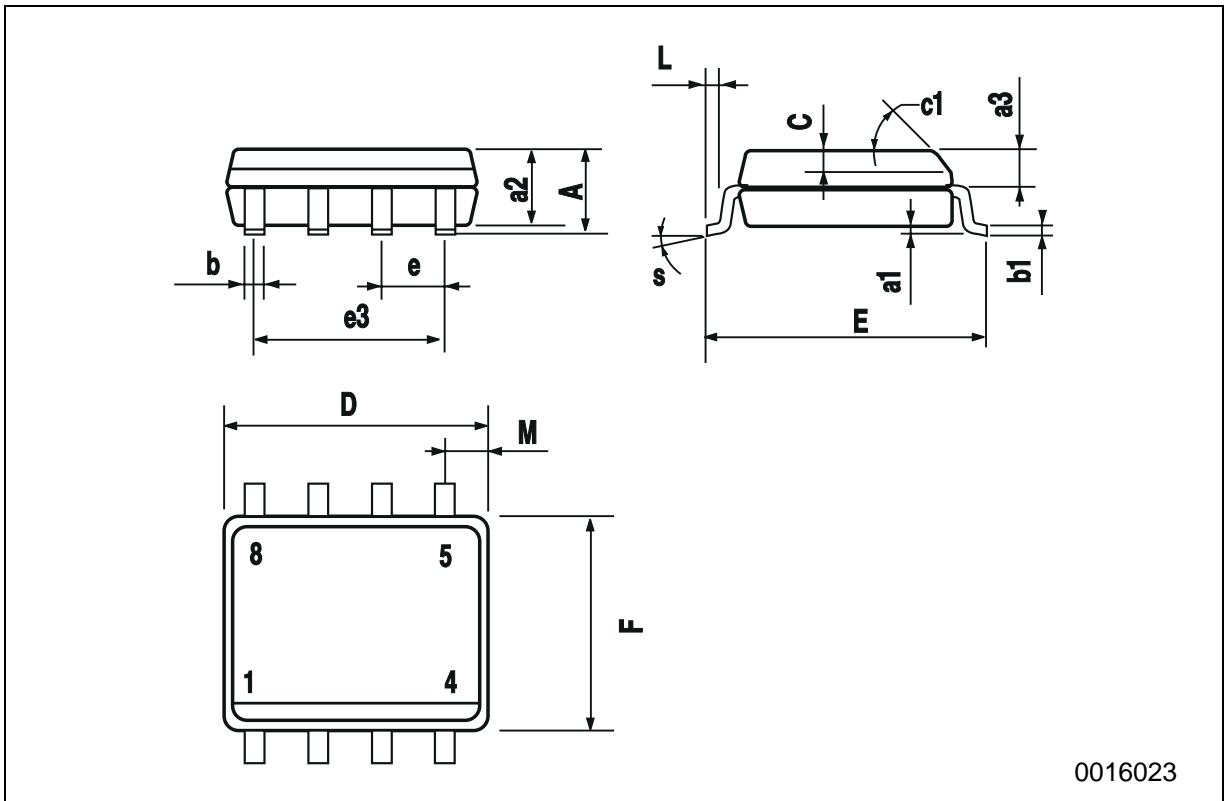
( $\bullet$ ) Pulse width limited by safe operating area

**SCHOTTKY STATIC ELECTRICAL CHARACTERISTICS**

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$I_R (*)$	Reversed Leakage Current	$T_J = 25\text{ }^\circ\text{C}$ $V_R = 30\text{ V}$ $T_J = 125\text{ }^\circ\text{C}$ $V_R = 30\text{ V}$		0.03	0.2 100	mA mA
$V_F (*)$	Forward Voltage drop	$T_J = 25\text{ }^\circ\text{C}$ $I_F = 3\text{ A}$ $T_J = 125\text{ }^\circ\text{C}$ $I_F = 3\text{ A}$		0.46	0.51 0.46	V V

**SO-8 MECHANICAL DATA**

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A			1.75			0.068
a1	0.1		0.25	0.003		0.009
a2			1.65			0.064
a3	0.65		0.85	0.025		0.033
b	0.35		0.48	0.013		0.018
b1	0.19		0.25	0.007		0.010
C	0.25		0.5	0.010		0.019
c1	45 (typ.)					
D	4.8		5.0	0.188		0.196
E	5.8		6.2	0.228		0.244
e		1.27			0.050	
e3		3.81			0.150	
F	3.8		4.0	0.14		0.157
L	0.4		1.27	0.015		0.050
M			0.6			0.023
S	8 (max.)					



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