

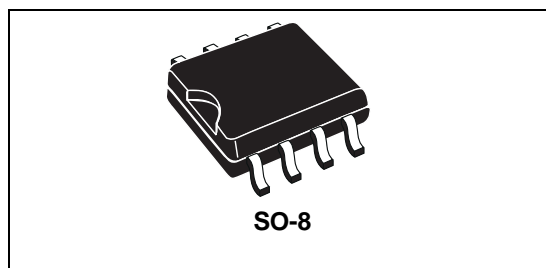


STS3DPFS30

StripFET™ P - CHANNEL 30V - 0.065Ω - 3A - S0-8 MOSFET PLUS SCHOTTKY RECTIFIER

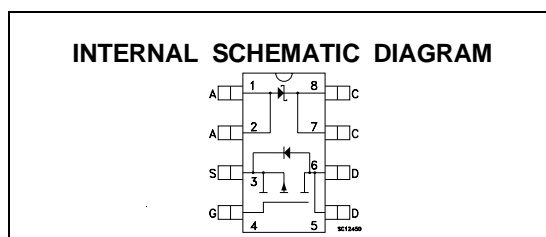
PRELIMINARY DATA

MAIN PRODUCT CHARACTERISTICS			
MOSFET	V _{DSS}	R _{DS(on)}	I _D
	30V	0.09Ω	3A
SCHOTTKY	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 kΩ)	30	V
V _{GS}	Gate-source Voltage	± 20	V
I _D	Drain Current (continuous) at T _c = 25 °C	3	A
I _D	Drain Current (continuous) at T _c = 100 °C	1.9	A
I _{DM(•)}	Drain Current (pulsed)	12	A
P _{tot}	Total Dissipation at T _c = 25 °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	3	A
I _{FSM}	Surge Non Repetitive Forward Current	75	A
I _{RRM}	Repetitive Peak Reverse Current	1	A
I _{RSM}	Non Repetitive Peak Reverse Current	1	A
dv/dt	Critical Rate Of Rise Of Reverse Voltage	10000	V/μs

(•) 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

$R_{thj-amb}$	(*) Thermal Resistance Junction-ambient MOSFET	85	°C/W
$R_{thj-amb}$	(*) Thermal Resistance Junction-ambient SCHOTTKY	100	°C/W
T_{stg}	Storage Temperature Range	-65 to 150	°C
T_j	Junction Temperature	150	°C
	(*) mounted on FR-4 board (steady state)		

MOSFET ELECTRICAL CHARACTERISTICS ($T_{case} = 25\text{ °C}$ unless otherwise specified)

OFF

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$V_{(BR)DSS}$	Drain-source Breakdown Voltage	$I_D = 250\ \mu A$ $V_{GS} = 0$	30			V
I_{DSS}	Zero Gate Voltage Drain Current ($V_{GS} = 0$)	$V_{DS} = \text{Max Rating}$ $V_{DS} = \text{Max Rating}$ $T_c = 125\text{ °C}$			1 10	μA μA
I_{GSS}	Gate-body Leakage Current ($V_{DS} = 0$)	$V_{GS} = \pm 20\text{ V}$			± 100	nA

ON (*)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}$ $I_D = 250\ \mu A$	2	3	4	V
$R_{DS(on)}$	Static Drain-source On Resistance	$V_{GS} = 10\text{ V}$ $I_D = 1.5\text{ A}$		0.065	0.09	Ω
$I_{D(on)}$	On State Drain Current	$V_{DS} > I_{D(on)} \times R_{DS(on)max}$ $V_{GS} = 10\text{ V}$	3			A

DYNAMIC

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$g_{fs} (*)$	Forward Transconductance	$V_{DS} > I_{D(on)} \times R_{DS(on)max}$ $I_D = 1.5\text{ A}$		5		S
C_{iss}	Input Capacitance	$V_{DS} = 25\text{ V}$ $f = 1\text{ MHz}$ $V_{GS} = 0$		1600		pF
C_{oss}	Output Capacitance			500		pF
C_{rss}	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
$t_{r(Voff)}$ 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 μs , duty cycle 1.5 %

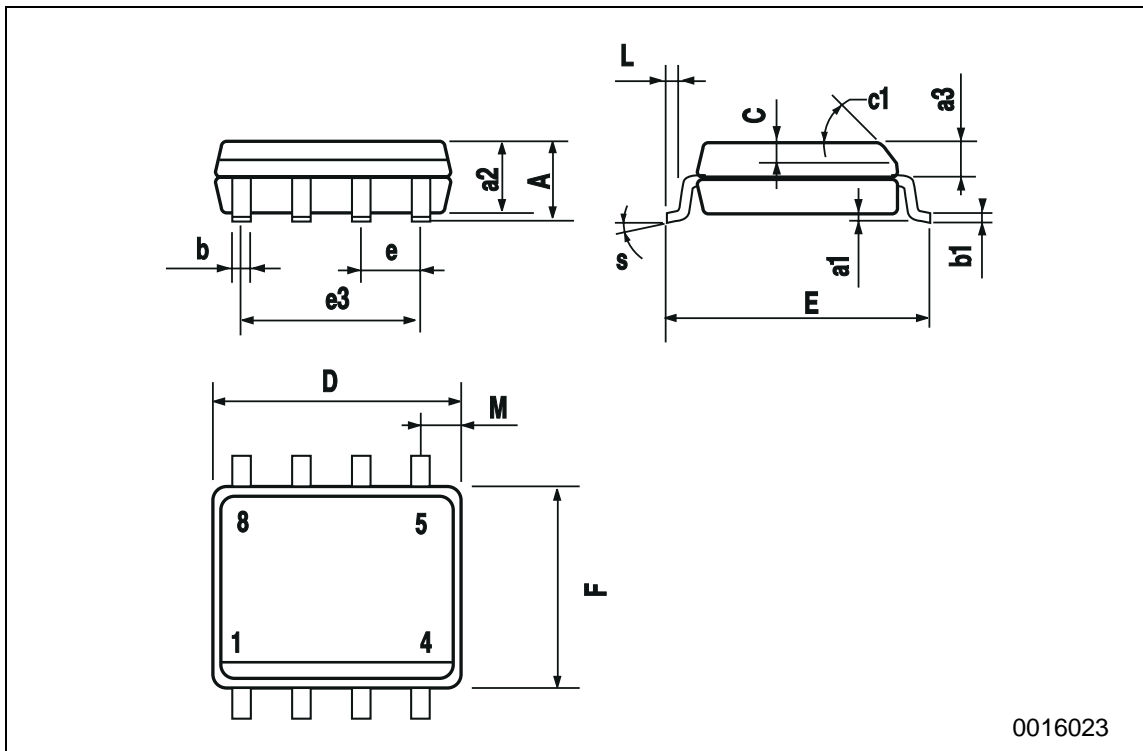
(\bullet) Pulse width limited by safe operating area

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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