

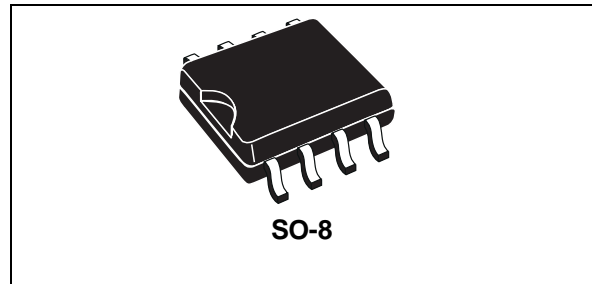


STS3DPFS30

P - CHANNEL ENHANCEMENT MODE POWER MOSFET PLUS SCHOTTKY RECTIFIER

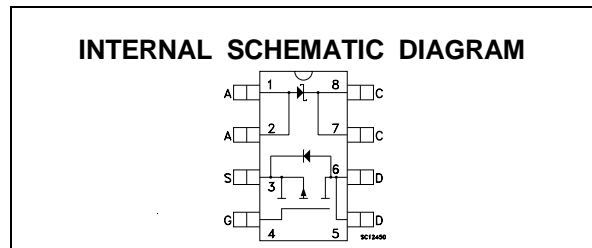
TARGET DATA

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	0.44V



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	± 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/ 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 °C unless otherwise specified)

OFF

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V _{(BR)DSS}	Drain-source Breakdown Voltage	I _D = 250 μA V _{GS} = 0	30			V
I _{DSS}	Zero Gate Voltage Drain Current (V _{GS} = 0)	V _{DS} = Max Rating V _{DS} = Max Rating T _c = 125 °C			1 10	μA μA
I _{GSS}	Gate-body Leakage Current (V _{DS} = 0)	V _{GS} = ± 20 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 μA	2	3	4	V
R _{DS(on)}	Static Drain-source On Resistance	V _{GS} = 10V I _D = 1.5 A			90	mΩ
I _{D(on)}	On State Drain Current	V _{DS} > I _{D(on)} × R _{DS(on)max} V _{GS} = 10 V	3			A

DYNAMIC

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
g _{fs} (*)	Forward Transconductance	V _{DS} > I _{D(on)} × R _{DS(on)max} I _D = 3 A		7		S
C _{iss}	Input Capacitance	V _{DS} = 25 V f = 1 MHz V _{GS} = 0		920		pF
C _{oss}	Output Capacitance			350		pF
C _{rss}	Reverse Transfer Capacitance			200		pF

ELECTRICAL CHARACTERISTICS (continued)

SWITCHING ON

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$t_{d(on)}$ t_r	Turn-on Time Rise Time					ns ns
Q_g Q_{gs} Q_{gd}	Total Gate Charge Gate-Source Charge Gate-Drain Charge	$V_{DD} = 24\text{ V}$ $I_D = 3\text{ A}$ $V_{GS} = 10\text{ V}$		21		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					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	$I_{SD} = 3\text{ A}$ $V_{GS} = 0$			2.5	V
t_{rr} Q_{rr} I_{RRM}	Reverse Recovery Time Reverse Recovery Charge Reverse Recovery Current					ns μC A

(*) Pulsed: Pulse duration = 300 μs , duty cycle 1.5 %

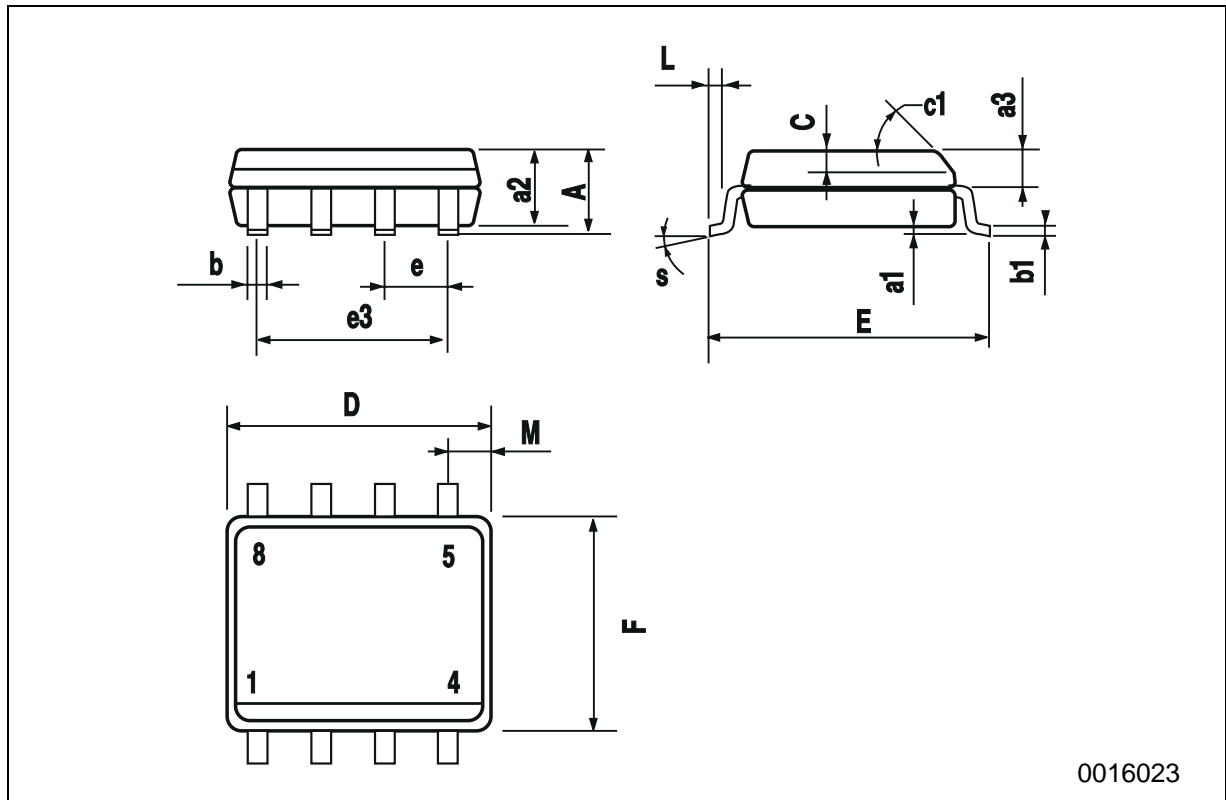
(\bullet) Pulse width limited by safe operating area

SCHOTTCKY STATIC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$I_R (*)$	Reversed Leakage Current	$T_J = 25\text{ }^\circ\text{C}$ $V_R = 30\text{ V}$ $T_J = 125\text{ }^\circ\text{C}$ $V_R = 30\text{ V}$		20	0.2 100	mA mA
$V_F (*)$	Forward Voltage drop	$T_J = 25\text{ }^\circ\text{C}$ $I_F = 3\text{ A}$ $T_J = 125\text{ }^\circ\text{C}$ $I_F = 3\text{ A}$		0.39	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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