STS3DPFS30

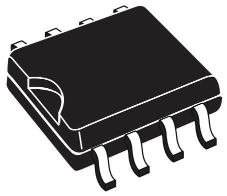
P - CHANNEL ENHANCEMENT MODE POWER MOSFET PLUS SCHOTTKY RECTIFIER

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

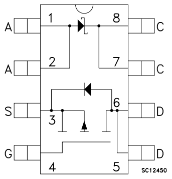
DESCRIPTION:

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.



SO-8

INTERNAL SCHEMATIC DIAGRAM



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 ^oC	3	A
I_D	Drain Current (continuous) at T_c = 100 ^oC	1.9	A
I_{DM}(•)	Drain Current (pulsed)	12	A
P_{tot}	Total Dissipation at T_c = 25 ^oC	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 ^oC δ =0.5	3	A
I_{FSM}	Surge Non Repetitive Forward Current	tp= 10 ms Sinusoidal	75	A
I_{RRM}	Repetitive Peak Reverse Current	tp=2 µs F=1 kHz	1	A
I_{RSM}	Non Repetitive Peak Reverse Current	tp=100 µs	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

THERMAL DATA

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

MOSFET ELECTRICAL CHARACTERISTICS (T_{case} = 25 ^{o}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 ^{o}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} > $I_{D(on)}$ x $R_{DS(on)max}$ V_{GS} = 10 V	3			A

DYNAMIC

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
g_{fs} (*)	Forward Transconductance	V_{DS} > $I_{D(on)}$ x $R_{DS(on)max}$ I_D =3 A		7		S
C_{iss} C_{oss} C_{rss}	Input Capacitance Output Capacitance Reverse Transfer Capacitance	V_{DS} = 25 V f = 1 MHz V_{GS} = 0		920 350 200		pF pF 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 V I_D = 3 A V_{GS} = 10 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}(•)	Source-drain Current Source-drain Current (pulsed)				3 12	A A
V_{SD} (∗)	Forward On Voltage	I_{SD} = 3 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

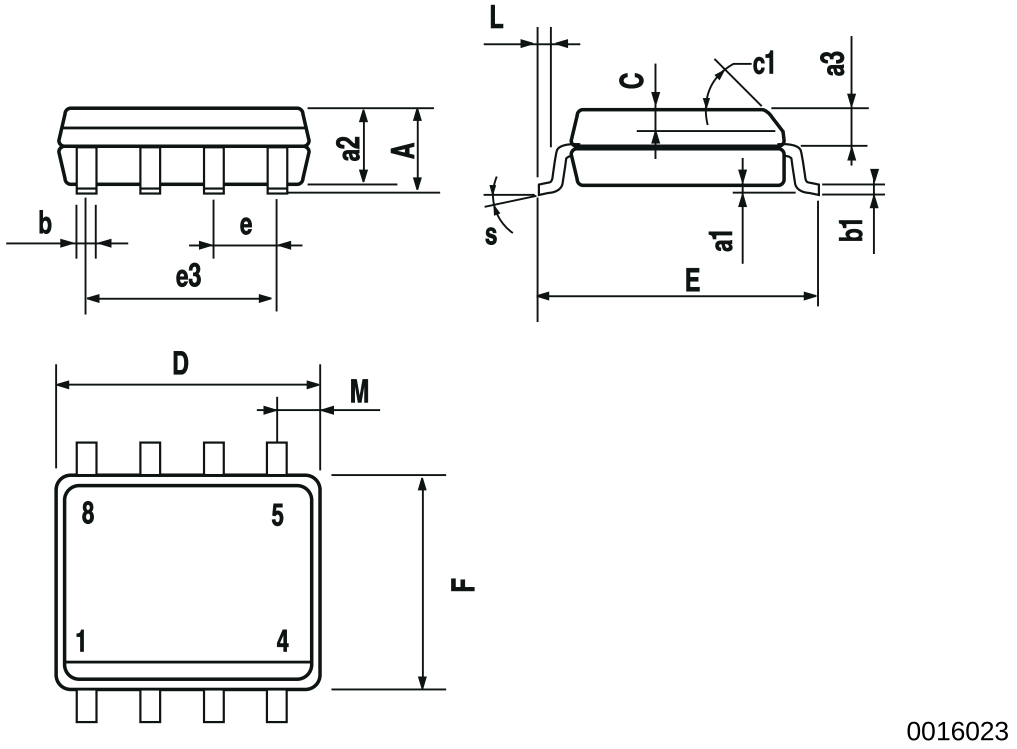
(∗) Pulsed: Pulse duration = 300 μs, duty cycle 1.5 %
(•) Pulse width limited by safe operating area

SCHOTTCKY STATIC ELETTRICAL CHARACTERISTICS

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_R(∗)	Reversed Leakage Current	T_J= 25 °C V_R=30V T_J= 125 °C V_R=30V		 20	0.2 100	mA mA
V_F(∗)	Forward Voltage drop	T_J= 25 °C I_F=3A T_J= 125 °C I_F=3A		 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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