

General Description

These miniature surface mount MOSFETs utilize a high cell density trench process to provide low $r_{DS(on)}$ and to ensure minimal power loss and heat dissipation. Typical applications are DC-DC converters and power management in portable and battery-powered products such as computers, printers, PCMCIA cards, cellular and cordless telephones.

Features

- Advanced high cell density Trench technology
- Fast switching speed
- Lower On-resistance
- 100% EAS Guaranteed
- Simple Drive Requirement

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-30	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D@T_C=25^\circ C$	Continuous Drain Current ¹	-30	A
$I_D@T_C=100^\circ C$	Continuous Drain Current ¹	-18	A
I_{DM}	Pulsed Drain Current ²	-90	A
EAS	Single Pulse Avalanche Energy ³	42	mJ
I_{AS}	Avalanche Current	-30	A
$P_D@T_C=25^\circ C$	Total Power Dissipation	50	W
T_{STG}	Storage Temperature Range	-55 to 175	$^\circ C$
T_J	Operating Junction Temperature Range	-55 to 175	$^\circ C$

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient ¹	---	70	$^\circ C/W$
$R_{\theta JC}$	Thermal Resistance Junction -Case ¹	---	3.5	$^\circ C/W$

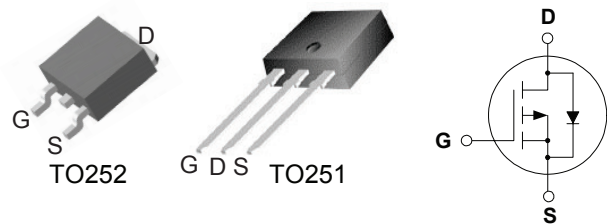
Product Summary

BVDSS	RDSON	ID
-30V	22m Ω	-30A

Applications

- DC-DC Converters
- Desktop PCs
- LED controller

TO252 / TO251 Pin Configuration



Electrical Characteristics (T_J=25 °C, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =-250uA	-30	---	---	V
ΔBV _{DSS} /ΔT _J	BVDSS Temperature Coefficient	Reference to 25 °C, I _D =-1mA	---	-0.02	---	V/°C
R _{DS(ON)}	Static Drain-Source On-Resistance ²	V _{GS} =-10V, I _D =-18A	---	---	22	mΩ
		V _{GS} =-4.5V, I _D =-10A	---	---	37	
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =-250uA	-1	---	-3	V
ΔV _{GS(th)}	V _{GS(th)} Temperature Coefficient		---	5.08	---	mV/°C
I _{DSS}	Drain-Source Leakage Current	V _{DS} =-30V, V _{GS} =0V, T _J =25°C	---	---	-1	uA
		V _{DS} =-24V, V _{GS} =0V, T _J =150 °C	---	---	-25	
I _{GSS}	Gate-Source Leakage Current	V _{GS} =±20V, V _{DS} =0V	---	---	±100	nA
g _{fs}	Forward Transconductance	V _{DS} =-5V, I _D =-11A	---	24	---	S
R _g	Gate Resistance	V _{DS} =0V, V _{GS} =0V, f=1MHz	---	1.7	---	Ω
Q _g	Total Gate Charge	V _{DS} =-24V, V _{GS} =-4.5V, I _D =-18A	---	16	26	nC
Q _{gs}	Gate-Source Charge		---	4.4	---	
Q _{gd}	Gate-Drain Charge		---	7.2	---	
T _{d(on)}	Turn-On Delay Time	V _{DD} =-15V, V _{GS} =-10V, R _G =3.3Ω I _D =-18A	---	14	---	ns
T _r	Rise Time		---	25.6	---	
T _{d(off)}	Turn-Off Delay Time		---	51	---	
T _f	Fall Time		---	41	---	
C _{iss}	Input Capacitance	V _{DS} =-25V, V _{GS} =0V, f=1MHz	---	1050	---	pF
C _{oss}	Output Capacitance		---	285	---	
C _{rss}	Reverse Transfer Capacitance		---	200	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I _S	Continuous Source Current ¹	V _G =V _D =0V, Force Current	---	---	-30	A
I _{SM}	Pulsed Source Current ²		---	---	-90	A
V _{SD}	Diode Forward Voltage ²	V _{GS} =0V, I _S =-18A	---	---	-1.2	V

Note :

1.The data tested by surface mounted on a 1 inch²FR-4 board with 2OZ copper.

2.The data tested by pulsed, pulse width ≤ 300us, duty cycle ≤ 2%

3.The EAS data shows Max. rating. The test condition is V_{DD}=-24V, V_{GS}=-10V, L=0.02mH, I_L=-11A