



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

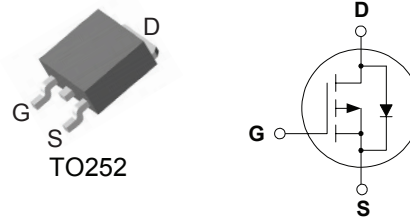
Product Summary

BVDSS	RDSON	ID
-30V	50mΩ	-20A

Applications

- DC-DC Converters
- Desktop PCs
- LED controller

TO252 Pin Configuration



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	-20	A
$I_D@T_C=100^\circ C$	Continuous Drain Current	-12	A
I_{DM}	Pulsed Drain Current ¹	-57	A
I_{AS}	Avalanche Current	-19	A
$P_D@T_C=25^\circ C$	Total Power Dissipation ²	30	W
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ C$
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ C$

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient ²	---	71.4	$^\circ C/W$
$R_{\theta JC}$	Thermal Resistance Junction -Case	---	1.67	$^\circ C/W$



Electrical Characteristics ($T_J=25\text{ }^\circ\text{C}$, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	-30	---	---	V
$\Delta BV_{DSS}/\Delta T_J$	BVDSS Temperature Coefficient	Reference to 25°C , $I_D=-250\mu A$	---	-15	---	MV/ $^\circ\text{C}$
$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{GS}=-10V, I_D=-10A$	---	---	50	m Ω
		$V_{GS}=-4.5V, I_D=-5A$	---	---	90	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}, I_D=-250\mu A$	-1	---	-3	V
$\Delta V_{GS(th)}$	$V_{GS(th)}$ Temperature Coefficient		---	4.0	---	mV/ $^\circ\text{C}$
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=-30V, V_{GS}=0V, T_J=25^\circ\text{C}$	---	---	-10	μA
		$V_{DS}=-30V, V_{GS}=0V, T_J=125^\circ\text{C}$	---	---	-100	
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	---	---	± 100	nA
g_{fs}	Forward Transconductance	$V_{DS}=-8V, I_D=-9.5A$	---	6	---	S
Q_g	Total Gate Charge	$V_{DS}=-24V, V_{GS}=-5.0V, I_D=-19A$	---	15	21	nC
Q_{gs}	Gate-Source Charge		---	3.4	---	
Q_{gd}	Gate-Drain Charge		---	9.7	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DD}=-15V, V_{GS}=-5.0V, R_G=3.3\Omega$ $I_D=-19A$	---	16	---	ns
T_r	Rise Time		---	125	---	
$T_{d(off)}$	Turn-Off Delay Time		---	25	---	
T_f	Fall Time		---	68	---	
C_{iss}	Input Capacitance	$V_{DS}=-25V, V_{GS}=0V, f=1\text{MHz}$	---	750	---	pF
C_{oss}	Output Capacitance		---	345	---	
C_{rss}	Reverse Transfer Capacitance		---	110	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	$V_G=V_D=0V$, Force Current	---	---	-20	A
I_{SM}	Pulsed Source Current		---	---	-57	A
V_{SD}	Diode Forward Voltage ³	$V_{GS}=0V, I_S=-19A, T_J=25^\circ\text{C}$	---	---	-3.4	V

Note :

- 1.Pulse width limited by Max. junction temperature.
- 2.When surface mounted to an FR-4 board using the 0.5 sq.in. drain pad size.
- 3.Reflects typical values. Cpk = Absolute Value of Spec (Spec-AVG/3.516 μA).