

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. This device is suitable for use in PWM, load switching and general purpose applications.

Features

- Lower On-resistance
- 100% EAS Guaranteed
- Fast switching speed
- RoHS Compliant

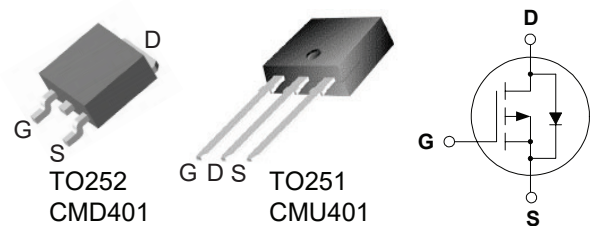
Product Summary

BVDSS	RDSON	ID
-60V	0.13Ω	-18A

Applications

- DC/DC Converter
- High Side Switch for Full Bridge Converter
- LED controller

TO252 / TO251 Pin Configuration



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-60	V
V_{GS}	Gate-Source Voltage	±20	V
$I_D@T_C=25^{\circ}C$	Continuous Drain Current ¹	-18	A
$I_D@T_C=100^{\circ}C$	Continuous Drain Current ¹	-13	A
I_{DM}	Pulsed Drain Current ²	-55	A
EAS	Single Pulse Avalanche Energy ³	49	mJ
$P_D@T_C=25^{\circ}C$	Total Power Dissipation	54	W
T_{STG}	Storage Temperature Range	-55 to 175	°C
T_J	Operating Junction Temperature Range	-55 to 175	°C

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient ¹	---	100	°C/W
$R_{\theta JC}$	Thermal Resistance Junction -Case ¹	---	1.85	°C/W

P-Channel Enhancement Mode Field Effect Transistor
Electrical Characteristics ($T_J=25^{\circ}\text{C}$, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V$, $I_D=-250\mu A$	-60	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance ²	$V_{GS}=-10V$, $I_D=-13A$	---	---	130	$m\Omega$
		$V_{GS}=-4.5V$, $I_D=-13A$	---	---	150	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}$, $I_D=-250\mu A$	-1	---	-3	V
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=-60V$, $V_{GS}=0V$, $T_J=25^{\circ}\text{C}$	---	---	-1	μA
		$V_{DS}=-60V$, $V_{GS}=0V$, $T_J=150^{\circ}\text{C}$	---	---	-100	
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20V$, $V_{DS}=0V$	---	---	± 100	nA
g_{fs}	Forward Transconductance	$V_{DS}=-10V$, $I_D=-13A$	---	12	---	S
R_g	Gate Resistance	$V_{DS}=0V$, $V_{GS}=0V$, $f=1\text{MHz}$	---	7	---	Ω
Q_g	Total Gate Charge	$V_{DS}=-48V$, $V_{GS}=-4.5V$, $I_D=-18A$	---	20	---	nC
Q_{gs}	Gate-Source Charge		---	3.4	---	
Q_{gd}	Gate-Drain Charge		---	6.6	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DD}=-30V$, $V_{GS}=-10V$, $R_G=3.3\Omega$ $I_D=-13A$	---	15	---	ns
T_r	Rise Time		---	10	---	
$T_{d(off)}$	Turn-Off Delay Time		---	30	---	
T_f	Fall Time		---	15	---	
C_{iss}	Input Capacitance	$V_{DS}=-25V$, $V_{GS}=0V$, $f=1\text{MHz}$	---	905	---	pF
C_{oss}	Output Capacitance		---	180	---	
C_{rss}	Reverse Transfer Capacitance		---	95	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current ¹	$V_G=V_D=0V$, Force Current	---	---	-18	A
I_{SM}	Pulsed Source Current ²		---	---	-55	A
V_{SD}	Diode Forward Voltage ²	$V_{GS}=0V$, $I_S=-18A$, $T_J=25^{\circ}\text{C}$	---	---	-1.3	V

Note :

1.The data tested by surface mounted on a 1 inch² FR-4 board with 20Z copper.

2.The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.

3.The EAS data shows Max. rating . The test condition is $V_{DD}=-25V$, $V_{GS}=-10V$, $L=0.5mH$, $I_L=-14A$.