

General Description

The 1402B combines advanced trench MOSFET technology with a low resistance package to provide extremely low RDS(ON). This device is ideal for load switch and battery protection applications.

Features

- Simple Drive Requirement
- Ultra-Low RDS(on)
- Green Device Available

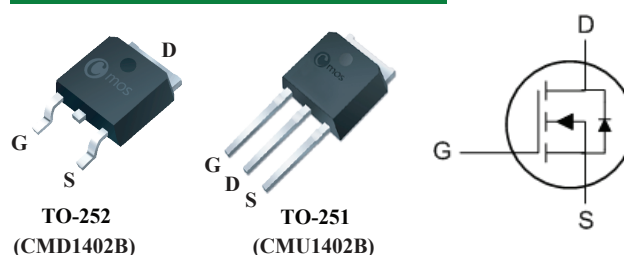
Product Summary

BVDSS	RDSON	ID
20V	6.2mΩ	50A

Applications

- Server
- DC/DC converter
- Motor drives

TO-252/251 Pin Configuration



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	20	V
V_{GS}	Gate-Source Voltage	± 12	V
$I_D@T_C=25^\circ\text{C}$	Continuous Drain Current	50	A
$I_D@T_C=100^\circ\text{C}$	Continuous Drain Current	19	A
I_{DM}	Pulsed Drain Current ¹	150	A
EAS	Avalanche energy ⁴	71	mJ
$P_D@T_C=25^\circ\text{C}$	Total Power Dissipation	55	W
T_{STG}	Storage Temperature Range	-55 to 175	$^\circ\text{C}$
T_J	Operating Junction Temperature Range	-55 to 175	$^\circ\text{C}$

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient	---	110	$^\circ\text{C}/\text{W}$
$R_{\theta JC}$	Thermal Resistance Junction -Case	---	2.6	$^\circ\text{C}/\text{W}$

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

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V$, $I_D=250\mu A$	20	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{GS}=10V$, $I_D=12A$	---	---	6.2	$m\Omega$
		$V_{GS}=4.5V$, $I_D=10A$	---	---	7.5	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}$, $I_D=250\mu A$	0.5	---	1.5	V
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=16V$, $V_{GS}=0V$, $T_J=25^{\circ}\text{C}$	---	---	1	μA
		$V_{DS}=16V$, $V_{GS}=0V$, $T_J=55^{\circ}\text{C}$	---	---	5	
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 12V$, $V_{DS}=0V$	---	---	± 100	nA
g_{fs}	Forward Transconductance ²	$V_{DS}=10V$, $I_D=20A$	---	35	---	S
Q_g	Total Gate Charge ($V_{GS}=4.5V$)	$V_{DS}=10V$, $V_{GS}=10V$, $I_D=20A$	---	36	---	nC
Q_{gs}	Gate-Source Charge		---	10	---	
Q_{gd}	Gate-Drain Charge		---	12	---	
$T_{d(on)}$	Turn-On Delay Time ³	$V_{DS}=10V$, $V_{GS}=5V$, $R_{GS}=3.3\Omega$ $I_D \leq 18A$	---	8	---	ns
T_r	Rise Time ³		---	85	---	
$T_{d(off)}$	Turn-Off Delay Time ³		---	20	---	
T_f	Fall Time ³		---	25	---	
C_{iss}	Input Capacitance	$V_{DS}=10V$, $V_{GS}=0V$, $f=1\text{MHz}$	---	2000	---	pF
C_{oss}	Output Capacitance		---	450	---	
C_{rss}	Reverse Transfer Capacitance		---	205	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V_{SD}	Diode Forward Voltage ²	$V_{GS}=0V$, $I_S=10A$	---	---	1.2	V

Note :

- 1.Pulse width limited by maximum junction temperature.
- 2.Pulse test : Pulse Width $\leq 300\mu\text{sec}$, Duty Cycle $\leq 2\%$.
- 3.Independent of operating temperature.
- 4.The EAS data shows Max. rating . The test condition is $V_{DD}=15V$, $V_{GS}=10V$, $L=2\text{mH}$, $I_D=8.4A$

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