

General Description

The 1402T 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

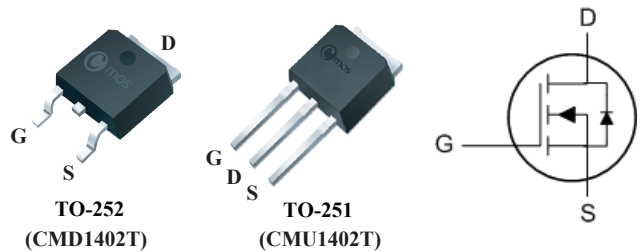
Product Summary

BVDSS	RDSON	ID
15V	7mΩ	70A

Applications

- Server
- DC/DC converter
- Motor drives

TO-252/251 Pin Configuration



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	15	V
V_{GS}	Gate-Source Voltage	±10	V
$I_D@T_C=25^\circ\text{C}$	Continuous Drain Current	70	A
$I_D@T_C=100^\circ\text{C}$	Continuous Drain Current	45	A
I_{DM}	Pulsed Drain Current ¹	210	A
EAS	Avalanche energy ²	100	mJ
$P_D@T_C=25^\circ\text{C}$	Total Power Dissipation	50	W
T_{STG}	Storage Temperature Range	-55 to 150	°C
T_J	Operating Junction Temperature Range	-55 to 150	°C

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient ³	---	75	°C/W
$R_{\theta JC}$	Thermal Resistance Junction -Case	---	2.5	°C/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	$V_{GS}=0V, I_D=250\mu A$	15	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{GS}=4.5V, I_D=20A$	---	6.1	7	m Ω
		$V_{GS}=2.5V, I_D=10A$	---	8	10	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}, I_D=250\mu A$	0.45	---	1	V
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=14V, V_{GS}=0V, T_J=25^{\circ}\text{C}$	---	---	1	μA
		$V_{DS}=10V, V_{GS}=0V, T_J=55^{\circ}\text{C}$	---	---	10	
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 10V, V_{DS}=0V$	---	---	± 100	nA
g_{fs}	Forward Transconductance	$V_{DS}=5V, I_D=20A$	---	31	---	S
R_g	Gate Resistance	$V_{DS}=0V, V_{GS}=0V, f=1\text{MHz}$	---	4	---	Ω
Q_g	Total Gate Charge ^{4,5}	$V_{DS}=10V, V_{GS}=4.5V, I_D=18A$	---	20	---	nC
Q_{gs}	Gate-Source Charge ^{4,5}		---	2.5	---	
Q_{gd}	Gate-Drain Charge ^{4,5}		---	4	---	
$T_{d(on)}$	Turn-On Delay Time ^{4,5}	$V_{DS}=10V, V_{GS}=4.5V, R_{GS}=6\Omega$ $I_D=1A$	---	10	---	ns
T_r	Rise Time ^{4,5}		---	15	---	
$T_{d(off)}$	Turn-Off Delay Time ^{4,5}		---	50	---	
T_f	Fall Time ^{4,5}		---	18	---	
C_{iss}	Input Capacitance	$V_{DS}=15V, V_{GS}=0V, f=1\text{MHz}$	---	1500	---	pF
C_{oss}	Output Capacitance		---	380	---	
C_{rss}	Reverse Transfer Capacitance		---	330	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V_{SD}	Diode Forward Voltage	$V_{GS}=0V, I_S=20A$	---	0.9	1.2	V

Note :

- Pulse width limited by maximum junction temperature.
- The EAS data shows Max. rating . The test condition is $V_{DD}=15V, V_{GS}=10V, L=0.5\text{mH}, I_D=20A$.
- 3.75°C/W when mounted on a 1 in2 pad of 2 oz copper.
- Pulse test : Pulse Width ≤ 300 sec, Duty Cycle $\leq 2\%$.
- Independent of operating temperature.

This product has been designed and qualified for the consumer market.
Cmos assumes no liability for customers' product design or applications.
Cmos reserves the right to improve product design ,functions and reliability without notice.