

### General Description

N-channel enhancement mode field-effect power transistor in a plastic envelope suitable for surface mounting. The device is intended for use in Switched Mode Power Supplies (SMPS), motor control, welding, DC/DC and AC/DC converters, and in general purpose switching applications.

### Features

- Advanced high cell density Trench technology
- Mounting Information Provided for the DPAK Package
- 100% avalanche tested
- RoHS Compliant

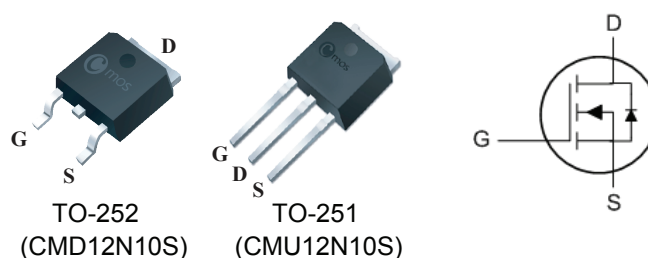
### Product Summary

BVDSS	RDSON	ID
100V	0.32Ω	12A

### Applications

- PWM Motor Controls
- LED controller
- Power Supplies
- DC-DC & DC-AC Converters

### TO-252/251 Pin Configuration



### Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
$V_{DS}$	Drain-Source Voltage	100	V
$V_{GS}$	Gate-Source Voltage	±20	V
$I_D@T_C=25^{\circ}C$	Continuous Drain Current <sup>1</sup>	12	A
$I_D@T_C=100^{\circ}C$	Continuous Drain Current <sup>1</sup>	7	A
$I_{DM}$	Pulsed Drain Current <sup>2</sup>	24	A
EAS	Single Pulse Avalanche Energy <sup>3</sup>	19	mJ
$P_D@T_C=25^{\circ}C$	Total Power Dissipation	45	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 <sup>1</sup>	---	100	°C/W
$R_{\theta JC}$	Thermal Resistance Junction -Case <sup>1</sup>	---	3	°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	$V_{GS}=0V$ , $I_D=250\mu A$	100	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance <sup>2</sup>	$V_{GS}=10V$ , $I_D=5A$	---	---	0.32	$\Omega$
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}$ , $I_D=250\mu A$	3	---	5	V
$I_{DSS}$	Drain-Source Leakage Current	$V_{DS}=100V$ , $V_{GS}=0V$ , $T_J=25^{\circ}\text{C}$	---	---	1	$\mu A$
		$V_{DS}=100V$ , $V_{GS}=0V$ , $T_J=150^{\circ}\text{C}$	---	---	10	
$I_{GSS}$	Gate-Source Leakage Current	$V_{GS}=\pm 20V$ , $V_{DS}=0V$	---	---	$\pm 100$	nA
$g_{fs}$	Forward Transconductance	$V_{DS}=5V$ , $I_D=2A$	---	4	---	S
$R_g$	Gate Resistance	$V_{DS}=0V$ , $V_{GS}=0V$ , $f=1\text{MHz}$	---	2	---	$\Omega$
$Q_g$	Total Gate Charge	$V_{DS}=50V$ , $V_{GS}=10V$ , $I_D=2.5A$	---	3.5	---	nC
$Q_{gs}$	Gate-Source Charge		---	1.3	---	
$Q_{gd}$	Gate-Drain Charge		---	1	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DD}=50V$ , $V_{GS}=10V$ , $R_{GEN}=3\Omega$ $R_L=20\Omega$	---	9.6	---	ns
$T_r$	Rise Time		---	45	---	
$T_{d(off)}$	Turn-Off Delay Time		---	40	---	
$T_f$	Fall Time		---	21	---	
$C_{iss}$	Input Capacitance	$V_{DS}=50V$ , $V_{GS}=0V$ , $f=1\text{MHz}$	---	170	---	pF
$C_{oss}$	Output Capacitance		---	30	---	
$C_{rss}$	Reverse Transfer Capacitance		---	10	---	

### Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$I_S$	Continuous Source Current <sup>1</sup>	$V_G=V_D=0V$ , Force Current	---	---	12	A
$I_{SM}$	Pulsed Source Current <sup>2</sup>		---	---	24	A
$V_{SD}$	Diode Forward Voltage <sup>2</sup>	$V_{GS}=0V$ , $I_S=5A$ , $T_J=25^{\circ}\text{C}$	---	---	1	V

Note :

1.The data tested by surface mounted on a 1 inch<sup>2</sup> 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  $V_{DD}=30V$  ,  $V_{GS}=10V$  ,  $L=2\text{mH}$  ,  $I_D=4.4A$

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