

### General Description

The 2144 uses advanced technology and design to provide excellent RDS(ON) .

This device is ideal for boost converters and synchronous rectifiers for consumer, telecom, industrial power supplies and LED backlighting.

### Features

- Max  $r_{DS(on)} = 2.5m\Omega$  at  $V_{GS} = 10V$
- Fast Switching
- RoHS Compliant

### Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
$V_{DS}$	Drain-Source Voltage	40	V
$V_{GS}$	Gate-Source Voltage	$\pm 20$	V
$I_D@T_C=25^\circ C$	Continuous Drain Current	120	A
$I_D@T_C=100^\circ C$		95	A
$I_{DM}$	Pulsed Drain Current	480	A
$E_{AS}$	Drain-Source Avalanche Energy <sup>1</sup>	840	mJ
$P_D@T_C=25^\circ C$	Total Power Dissipation	150	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(Steady-State)	---	50	$^\circ C/W$
$R_{\theta JC}$	Thermal Resistance Junction-case(Steady-State)	---	0.8	$^\circ C/W$

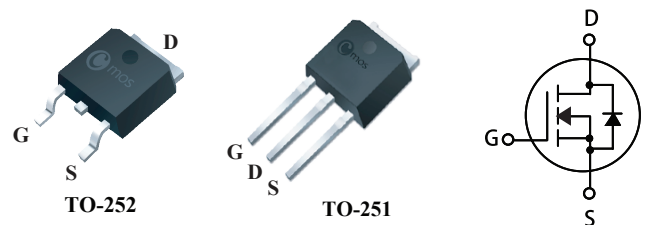
### Product Summary

BVDSS	RDSON	ID
40V	2.5m $\Omega$	120A

### Applications

- Inverters
- Power Supplies

### TO-252/251 Pin Configuration



Type	Package	Marking
CMD2144	TO-252	CMD2144
CMU2144	TO-251	CMU2144

**Electrical Characteristics (T<sub>J</sub>=25°C , unless otherwise noted)**

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV <sub>DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V , I <sub>D</sub> =250uA	40	---	---	V
R <sub>DS(ON)</sub>	Static Drain-Source On-Resistance	V <sub>GS</sub> =10V , I <sub>D</sub> =25A	---	2	2.5	mΩ
		V <sub>GS</sub> =4.5V , I <sub>D</sub> =20A	---	2.6	4.5	
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>GS</sub> =V <sub>DS</sub> , I <sub>D</sub> =250 uA	1	---	3	V
I <sub>DSS</sub>	Drain-Source Leakage Current	V <sub>DS</sub> =40V , V <sub>GS</sub> =0V	---	---	1	uA
I <sub>GSS</sub>	Gate-Source Leakage Current	V <sub>GS</sub> =±20V , V <sub>DS</sub> =0V	---	---	±100	nA
g <sub>fs</sub>	Forward Transconductance	V <sub>DS</sub> =5V , I <sub>D</sub> =20A	---	47	---	S
R <sub>g</sub>	Gate Resistance	V <sub>DS</sub> =10V , V <sub>GS</sub> =0V , f=1MHz	---	2	---	Ω
Q <sub>g</sub>	Total Gate Charge	I <sub>D</sub> =20A	---	68	---	nC
Q <sub>gs</sub>	Gate-Source Charge	V <sub>DS</sub> =20V	---	17	---	
Q <sub>gd</sub>	Gate-Drain Charge	V <sub>GS</sub> =10V	---	5	---	
T <sub>d(on)</sub>	Turn-On Delay Time	V <sub>DD</sub> =20V	---	13	---	ns
T <sub>r</sub>	Rise Time	R <sub>L</sub> =1Ω	---	10	---	
T <sub>d(off)</sub>	Turn-Off Delay Time	R <sub>G</sub> =3Ω	---	58	---	
T <sub>f</sub>	Fall Time	V <sub>GS</sub> =10V	---	11	---	
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =25V , V <sub>GS</sub> =0V , f=1MHz	---	5500	---	pF
C <sub>oss</sub>	Output Capacitance		---	760	---	
C <sub>rss</sub>	Reverse Transfer Capacitance		---	35	---	

**Diode Characteristics**

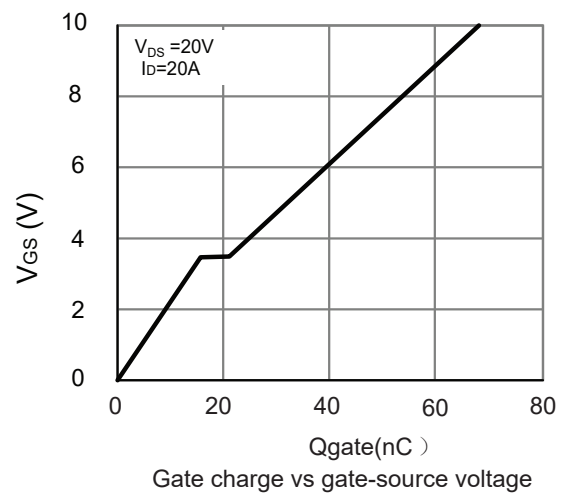
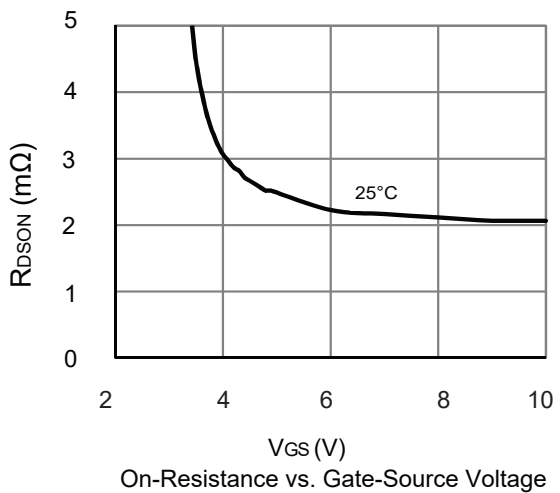
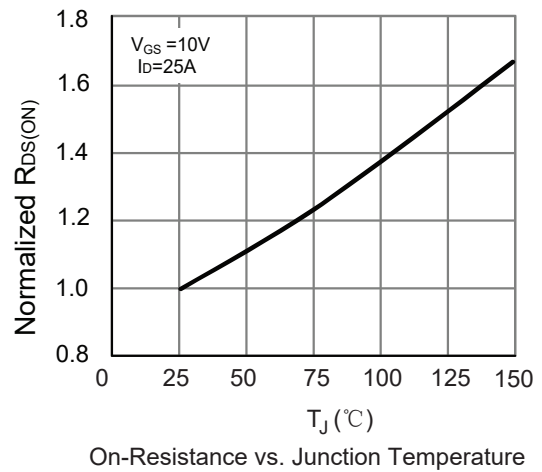
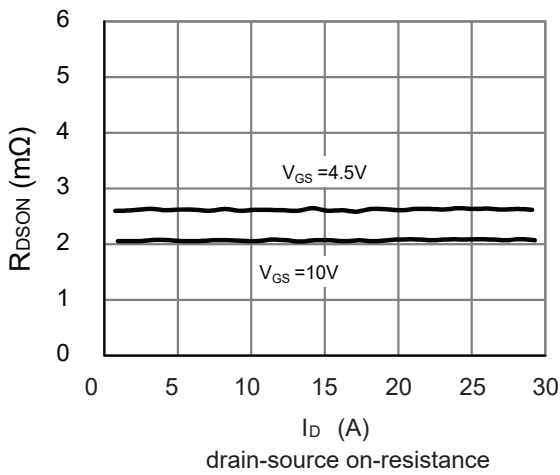
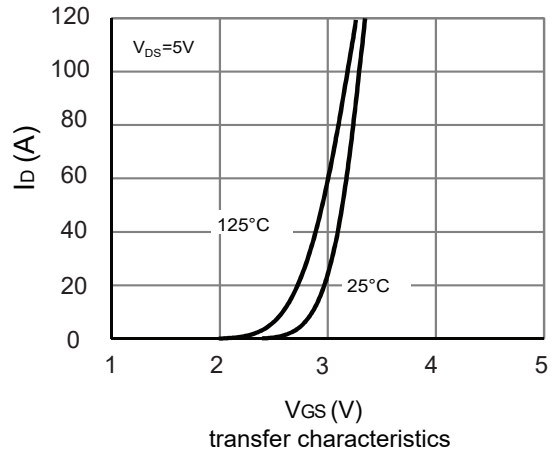
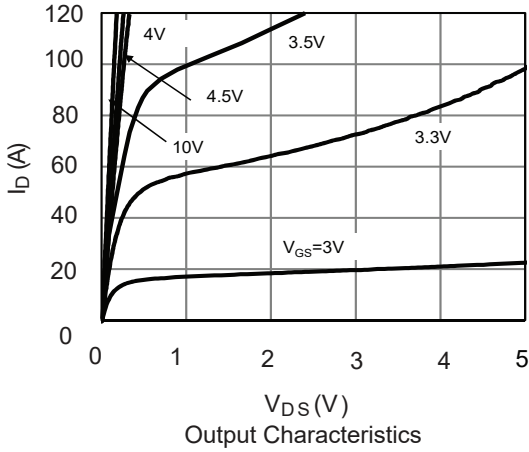
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I <sub>S</sub>	Continuous Source Current	V <sub>G</sub> =V <sub>D</sub> =0V , Force Current	---	---	120	A
I <sub>SM</sub>	Pulsed Source Current		---	---	480	A
V <sub>SD</sub>	Diode Forward Voltage	V <sub>GS</sub> =0V , I <sub>S</sub> =28A	---	---	1.2	V

Notes:

1.The EAS data shows Max. rating .The test condition is V<sub>DS</sub>=35V , V<sub>GS</sub>=10V , L=1mH , I<sub>AS</sub>=41A.

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Typical Characteristics



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