

650V, 110mΩ typ., 24A N-Channel Super Junction Power MOSFET

General Description

The 65R140 is power MOSFET using Cmos's advanced super junction technology that can realize very low on resistance and gate charge. It will provide much high efficiency by using optimized charge coupling technology. These devices are well suited for the switching power applications such as PFC, server/telecom power, FPD TV power, ATX power and industrial power applications.

Features

- Multi-layer Epitaxial Chip Technology
- Ultra-fast body diode
- Low On-Resistance
- 100% avalanche tested
- RoHS Compliant

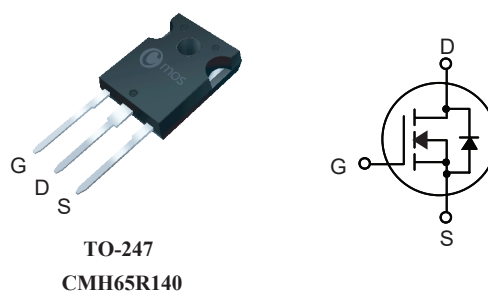
Product Summary

BVDSS	R _{DS(on)} max.	ID
650V	140mΩ	24A

Applications

- Charger
- Adaptor
- Power Supply

TO-247 Pin Configuration



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V _{DS}	Drain-Source Voltage	650	V
V _{GS}	Gate-Source Voltage	±30	V
I _D @T _C =25°C	Continuous Drain Current	24	A
I _D @T _C =100°C	Continuous Drain Current	17	A
I _{DM}	Pulsed Drain Current	96	A
EAS	Single Pulse Avalanche Energy (Note 1)	1500	mJ
P _D @T _C =25°C	Total Power Dissipation	250	W
T _{STG}	Storage Temperature Range	-55 to 150	°C
T _J	Operating Junction Temperature Range	-55 to 150	°C

* Drain current limited by maximum junction temperature.

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
R _{θJA}	Thermal Resistance Junction-ambient	---	64	°C/W
R _{θJC}	Thermal Resistance Junction-case	---	0.50	°C/W

650V, 110mΩ typ., 24A N-Channel Super Junction Power MOSFET

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

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V$, $I_D=250\mu A$	650	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{GS}=10V$, $I_D=12A$	---	110	140	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}$, $I_D=250\mu A$	3	---	5	V
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=650V$, $V_{GS}=0V$	---	---	5	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 30V$, $V_{DS}=0V$	---	---	±100	nA
g_{fs}	Forward Transconductance	$V_{DS}=10V$, $I_D=12A$	---	12	---	S
R_g	Gate Resistance	$V_{DS}=0V$, $V_{GS}=0V$, $f=1\text{MHz}$	---	9.6	---	Ω
Q_g	Total Gate Charge	$I_D=11A$	---	46	---	nC
Q_{gs}	Gate-Source Charge	$V_{DS}=480V$	---	14	---	
Q_{gd}	Gate-Drain Charge	$V_{GS}=10V$	---	24	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DS}=400V$	---	60	---	ns
T_r	Rise Time	$V_{GS}=10V$	---	61	---	
$T_{d(off)}$	Turn-Off Delay Time	$I_D=11A$	---	140	---	
T_f	Fall Time	$R_G=27\Omega$	---	31	---	
C_{iss}	Input Capacitance	$V_{DS}=100V$, $V_{GS}=0V$, $f=1\text{MHz}$	---	1650	---	pF
C_{oss}	Output Capacitance		---	100	---	
C_{rss}	Reverse Transfer Capacitance		---	2.2	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	$V_G=V_D=0V$, Force Current	---	---	24	A
I_{SM}	Pulsed Source Current		---	---	96	A
V_{SD}	Diode Forward Voltage	$V_{GS}=0V$, $I_S=12A$, $T_J=25^{\circ}\text{C}$	---	0.90	1.4	V
t_{rr}	Reverse Recovery Time	$di/dt = 100A/\mu s$	---	120	---	ns
Q_{rr}	Reverse Recovery Charge	$V_{DS}=400V$, $I_{SD}=11A$	---	0.63	---	μC

Note :

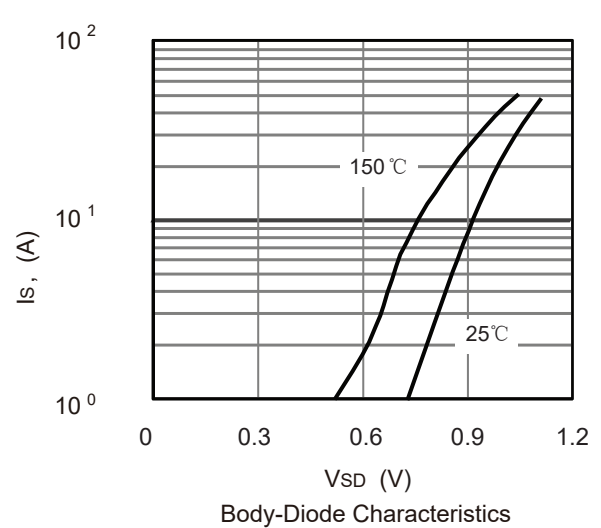
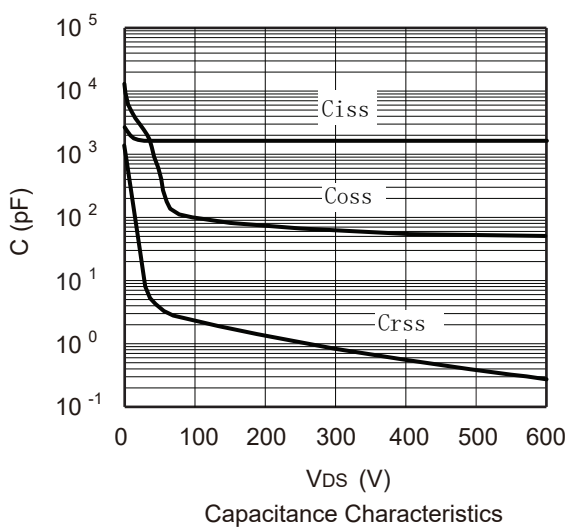
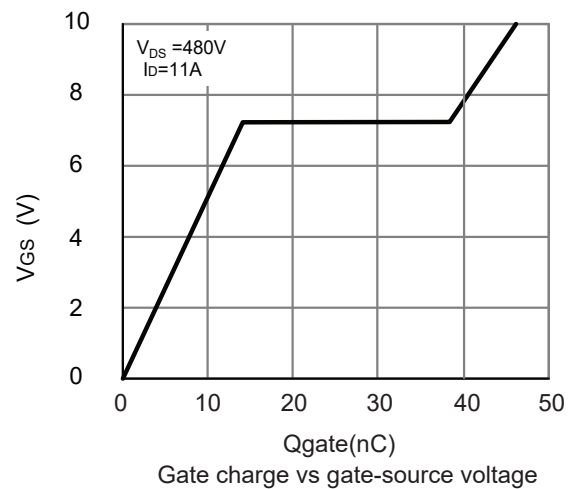
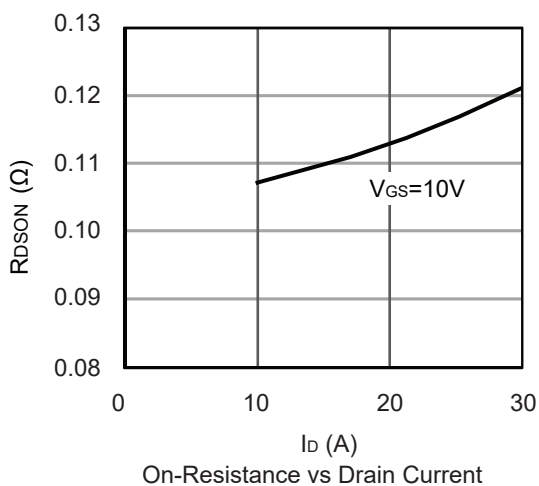
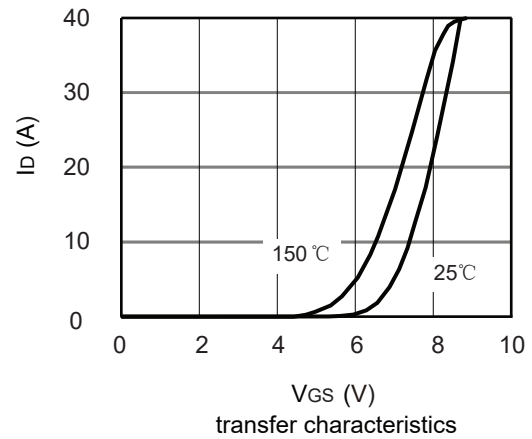
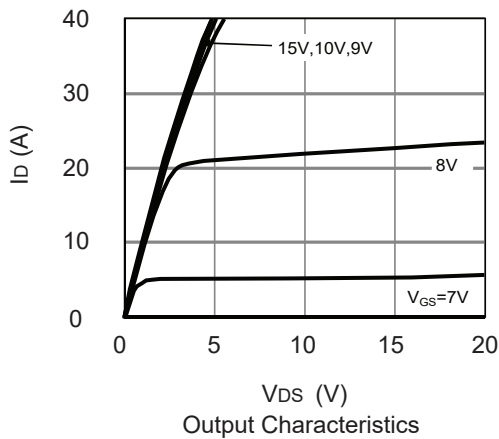
1.The EAS data shows Max. rating .The test condition is $V_{DS}=80V$, $V_{GS}=10V$, $L=30\text{mH}$, $I_{AS}=10A$.

This product has been designed and qualified for the consumer market.

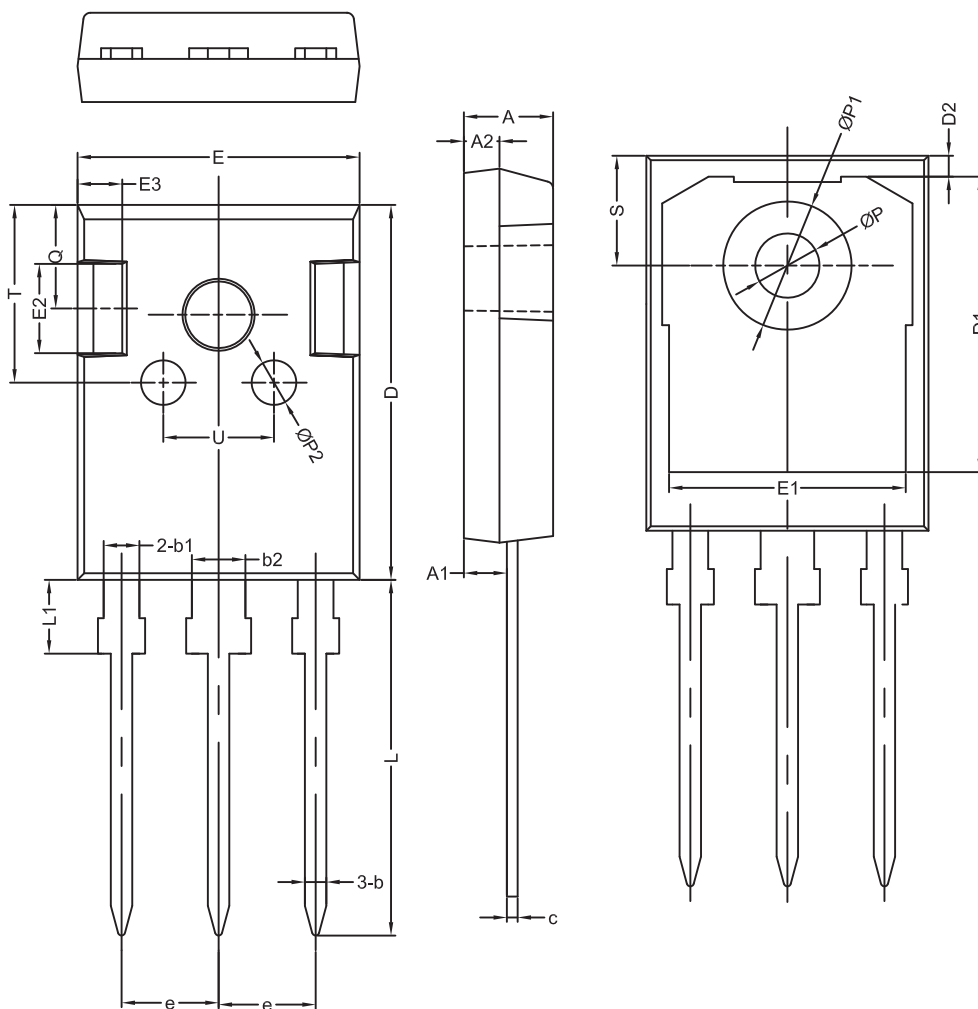
Cmos assumes no liability for customers' product design or applications.

Cmos reserves the right to improve product design ,functions and reliability without notice.Please refer to the latest version of specification.

Typical Characteristics



Unit :mm



符号	机械尺寸/mm			符号	机械尺寸/mm		
	最小值	典型值	最大值		最小值	典型值	最大值
A	4.80	5.00	5.20	E2		5.00	
A1	2.21	2.41	2.61	E3		2.50	
A2	1.90	2.00	2.10	e		5.44	
b	1.10	1.20	1.35	L	19.42	19.92	20.42
b1		2.00		L1		4.13	
b2		3.00		P	3.50	3.60	3.70
c	0.55	0.60	0.75	P1		7.19	
D	20.80	21.00	21.20	P2		2.50	
D1		16.55		Q		5.80	
D2		1.20		S	6.05	6.15	6.25
E	15.60	15.80	16.0	T		10.00	
E1		13.30		U		6.20	