

CMH65R090DT/CMA65R090DT

650V, 82mΩ typ., 40A N-Channel Super Junction Power MOSFET

General Description

The 65R090DT is power MOSFET using Cmos's advanced super junction technology. The resulting devices provide all benefits of a fast switching super junction MOSFET while offering an extremely fast and robust body diode. This combination of extremely low switching, commutation and conduction losses together with highest robustness make especially resonant switching applications more reliable, more efficient and lighter.

Features

- Ultra-fast body diode
- 100% avalanche tested
- RoHS Compliant
- Deep Trench

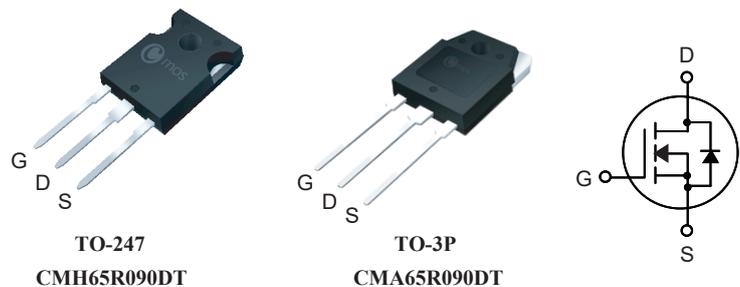
Product Summary

BVDSS	R _{DS(on)} max.	ID
650V	90mΩ	40A

Applications

- Charger
- Power Supply

TO-247/TO-3P 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	40	A
I _D @T _C =100°C	Continuous Drain Current	29	A
I _{DM}	Pulsed Drain Current	160	A
EAS	Single Pulse Avalanche Energy (Note 1)	980	mJ
P _D @T _C =25°C	Total Power Dissipation	470	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 _{θJA}	Thermal Resistance Junction-ambient	---	41	°C/W
R _{θJC}	Thermal Resistance Junction-case	---	0.27	°C/W

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Electrical Characteristics (T_J=25°C , unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V , I _D =250uA	650	---	---	V
R _{DS(ON)}	Static Drain-Source On-Resistance	V _{GS} =10V , I _D =15A	---	82	90	mΩ
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =250μA	3.0	---	5.0	V
I _{DSS}	Drain-Source Leakage Current	V _{DS} =650V , V _{GS} =0V	---	---	10	uA
I _{GSS}	Gate-Source Leakage Current	V _{GS} = ±30V , V _{DS} =0V	---	---	±100	nA
g _{fs}	Forward Transconductance	V _{DS} =10V , I _D = 15A	---	17	---	S
R _g	Gate Resistance	V _{DS} =0V , V _{GS} =0V , f=1MHz	---	3.2	---	Ω
Q _g	Total Gate Charge	V _{DS} =400V , I _D =12.5A V _{GS} =0 to 10V	---	53	---	nC
Q _{gs}	Gate-Source Charge		---	14	---	
Q _{gd}	Gate-Drain Charge		---	16	---	
T _{d(on)}	Turn-On Delay Time	V _{DD} =400V , I _D =12.5A R _G =5.3Ω , V _{GS} =13V	---	25	---	ns
T _r	Rise Time		---	11	---	
T _{d(off)}	Turn-Off Delay Time		---	92	---	
T _f	Fall Time		---	5	---	
C _{iss}	Input Capacitance	V _{DS} =100V , V _{GS} =0V , f=1MHz	---	2300	---	pF
C _{oss}	Output Capacitance		---	100	---	
C _{rss}	Reverse Transfer Capacitance		---	4.5	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I _S	Continuous Source Current	V _G =V _D =0V , Force Current	---	---	40	A
I _{SM}	Pulsed Source Current		---	---	160	A
V _{SD}	Diode Forward Voltage	V _{GS} =0V , I _S =15A , T _J =25°C	---	0.86	1.2	V
t _{rr}	Reverse Recovery Time	di/dt = 100A/μs	---	121	---	ns
Q _{rr}	Reverse Recovery Charge	I _F = 20A , V _{DD} =400V	---	1.67	---	μC

Note :

1. The EAS data shows Max. rating . The test condition is V_{DD}=100V , V_{GS}=10V , L=10mH , I_{AS} =14A.

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

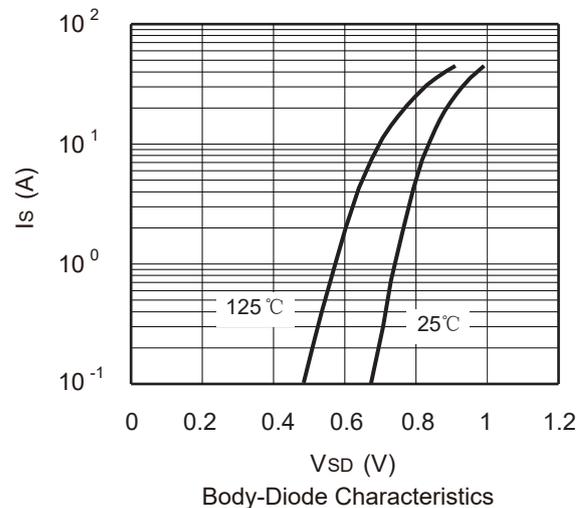
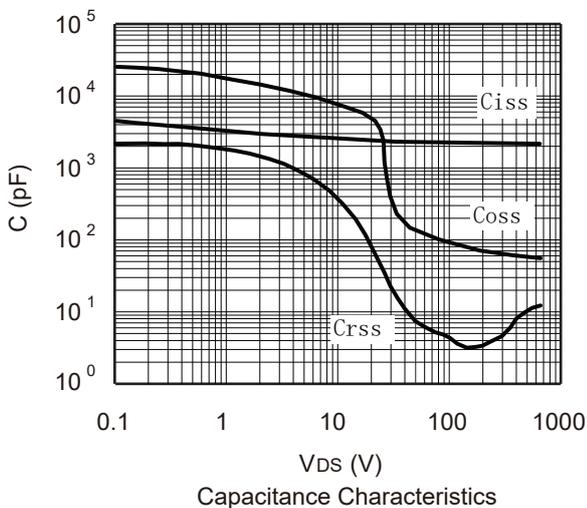
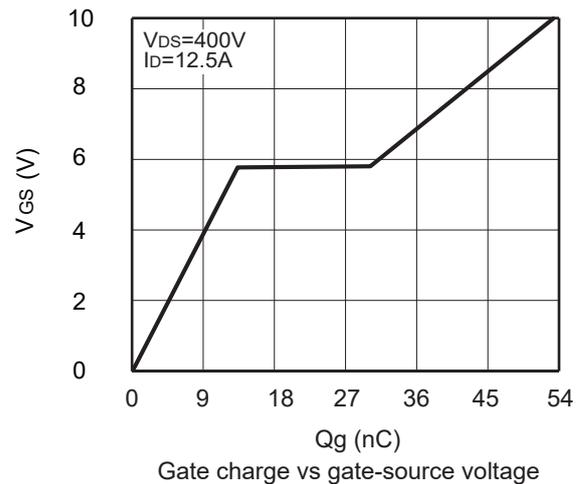
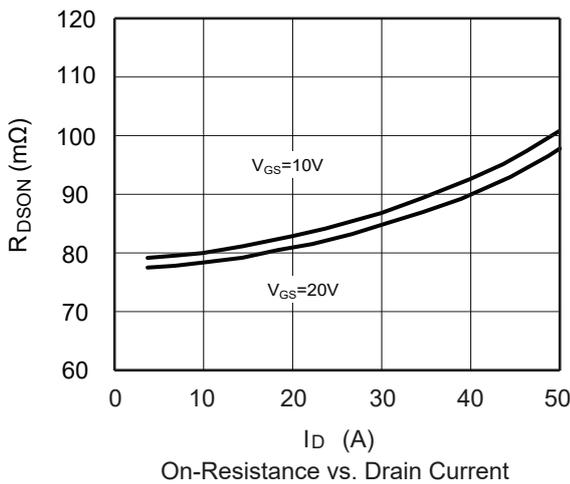
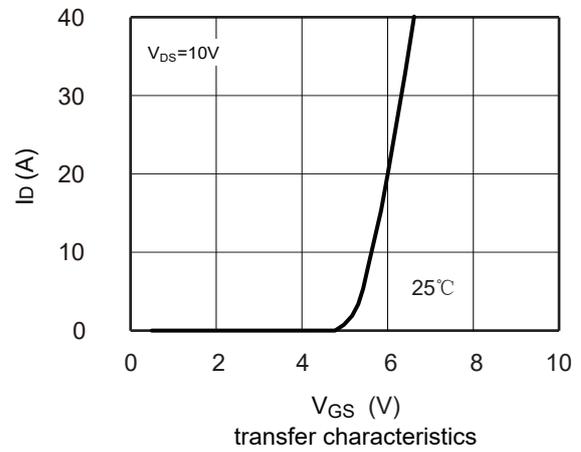
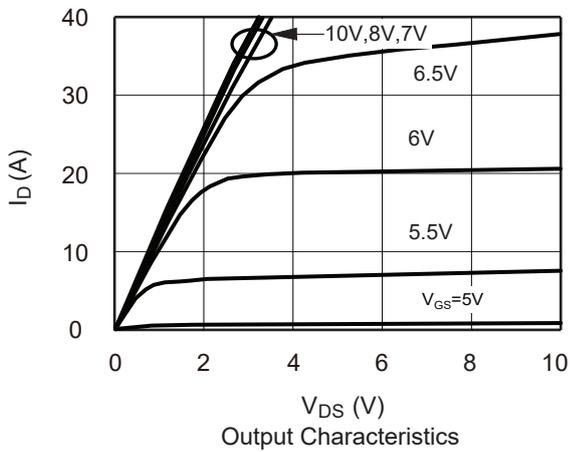
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Typical Characteristics



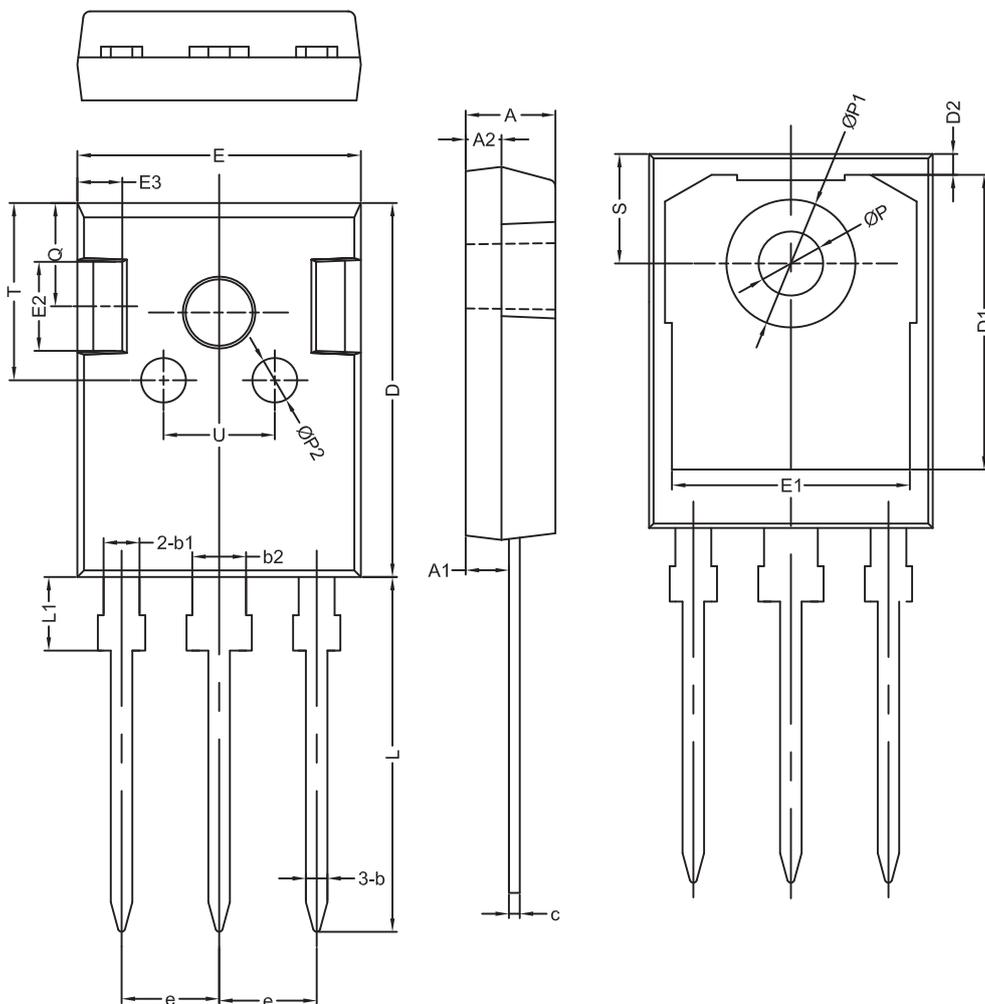
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Package Dimension

TO-247

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	

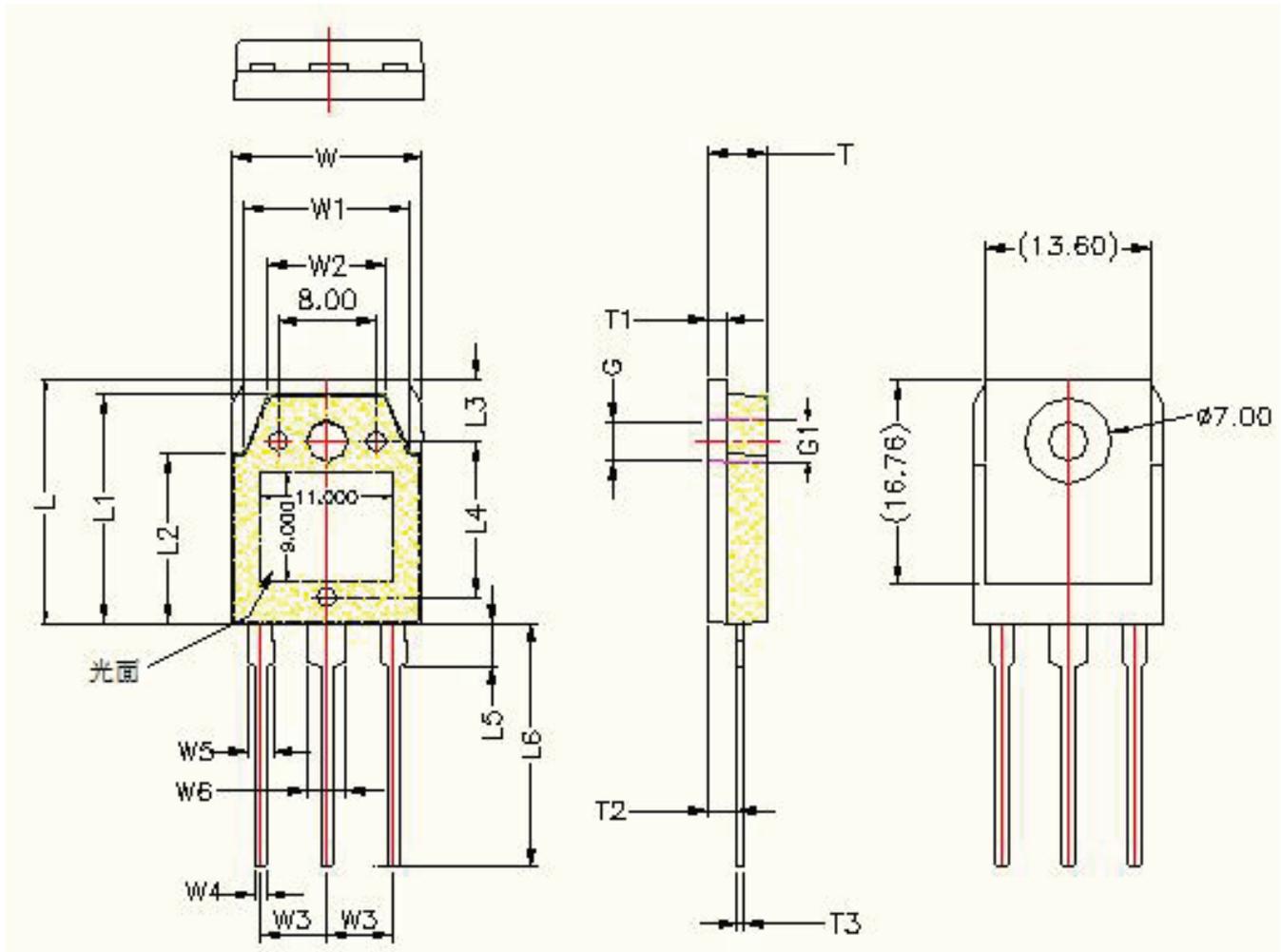
CMH65R090SD/CMA65R090SD

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Package Dimension

TO-3P

Unit :mm



Symbol	Dimensions	Symbol	Dimensions	Symbol	Dimensions
W	15.60±0.3	L	19.90±0.3	T	4.80±0.3
W1	13.60±0.3	L1	18.70±0.3	T1	1.50±0.3
W2	9.60±0.3	L2	13.90±0.3	T2	2.40±0.3
W3	5.45(TYP)	L3	5.00±0.3	T3	0.60±0.3
W4	1.00±0.3	L4	12.76±0.3	G	Ø3.25±0.3
W5	2.10±0.2	L5	3.50±0.3	G1	Ø3.58±0.3
W6	3.10±0.2	L6	20.00±0.3		