CMH65R160SD/CMA65R160SD

650V, 144mΩ typ., 25A N-Channel Super Junction Power MOSFET

General Description

The 65R160SD 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.

Product Summary

BVDSS	$R_{DS(on)}$ max.	ID
650V	160mΩ	25A

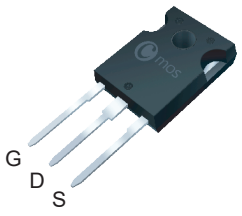
Applications

- Charger
- Power Supply

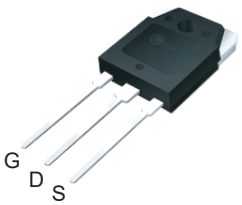
Features

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

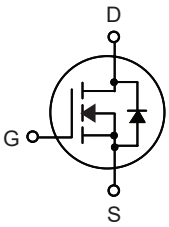
TO-247/TO-3P Pin Configuration



TO-247
CMH65R160SD



TO-3P
CMA65R160SD



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℃	Continuous Drain Current	25	A
I_D@T_C=100℃	Continuous Drain Current	17	A
I_{DM}	Pulsed Drain Current	100	A
EAS	Single Pulse Avalanche Energy (Note 1)	625	mJ
P_D@T_C=25℃	Total Power Dissipation	350	W
T_{STG}	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	150	℃

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient	---	65	℃/W
$R_{\theta JC}$	Thermal Resistance Junction-case	---	0.36	℃/W

650V, 144mΩ typ., 25A N-Channel Super Junction Power MOSFET

Electrical Characteristics (T_J=25℃ , 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=10A	---	144	160	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250μA	3	---	5	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
gfs	Forward Transconductance	V_{DS}=10V , I_D =10A	---	22	---	S
R_g	Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	---	12	---	Ω
Q_g	Total Gate Charge	V_{DD} =480V , I_D=10A V_{GS}=10V	---	36	---	nC
Q_{gs}	Gate-Source Charge		---	10	---	
Q_{gd}	Gate-Drain Charge		---	20	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DS}=400V , I_D =10A R_G =5Ω , V_{GS}=10V	---	46	---	ns
T_r	Rise Time		---	61	---	
$T_{d(off)}$	Turn-Off Delay Time		---	120	---	
T_f	Fall Time		---	34	---	
C_{iss}	Input Capacitance	V_{DS}=100V , V_{GS}=0V , f=1MHz	---	1100	---	pF
C_{oss}	Output Capacitance		---	60	---	
C_{rss}	Reverse Transfer Capacitance		---	3.2	---	

Diode Characteristics

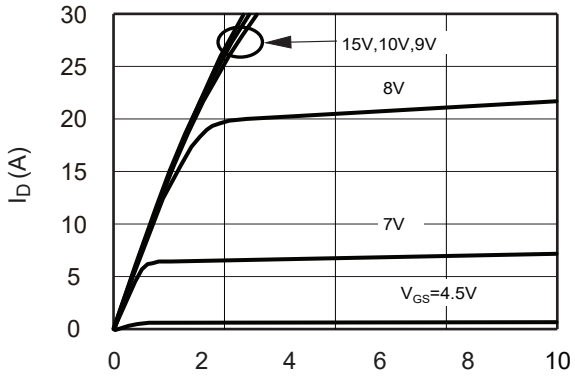
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	V_G=V_D=0V , Force Current	---	---	25	A
I_{SM}	Pulsed Source Current		---	---	100	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_S=10A ,T_J=25℃	---	0.90	1.2	V
t_{rr}	Reverse Recovery Time	di/dt = 100A/μs V_{DD}=400V , I_{SD}=10A	---	95	---	ns
Q_{rr}	Reverse Recovery Charge		---	0.32	---	μC

Note :

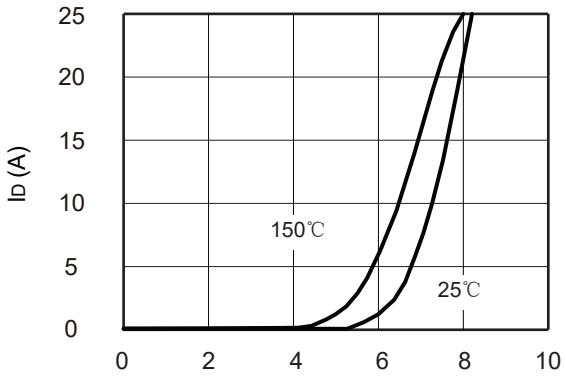
1. The EAS data shows Max. rating .The test condition is V_{DS}=80V , V_{GS}=10V , L=50mH , I_{AS}=5A.

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Cmos reserver the right to improve product design ,functions and reliability wihtout notice.Please refer to the latest version of specification.

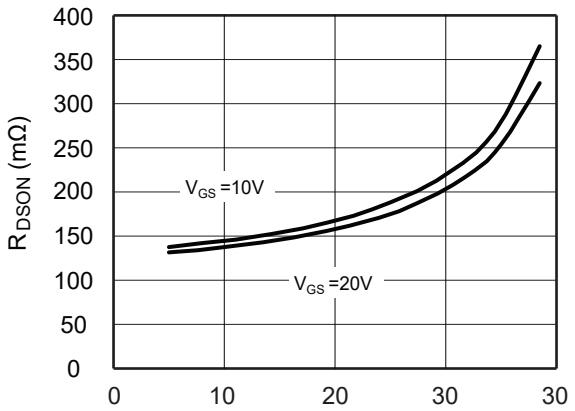
Typical Characteristics



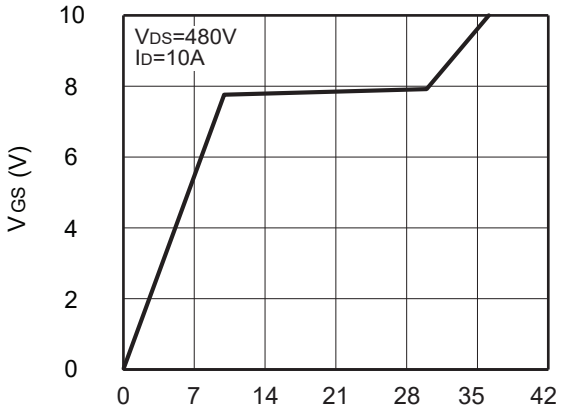
Output Characteristics



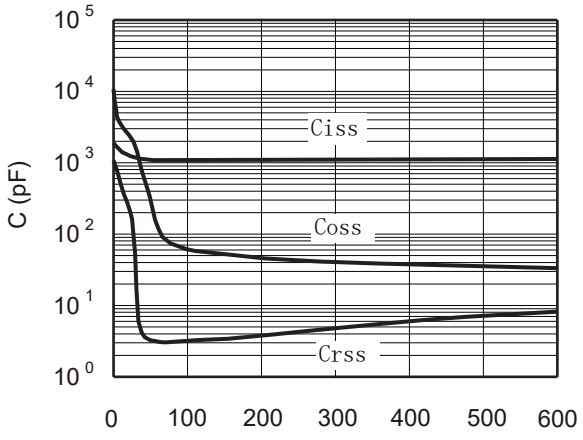
transfer characteristics



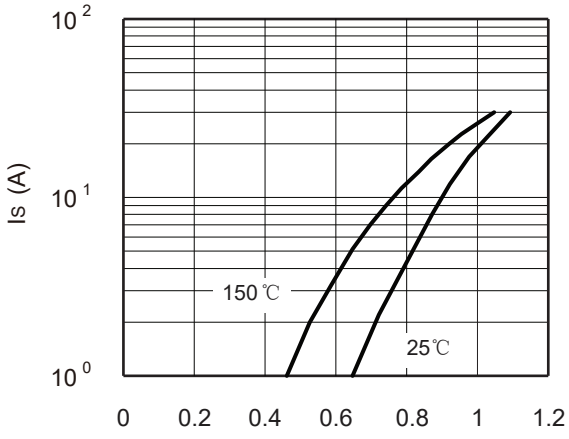
On-Resistance vs. Drain Current



Gate charge vs gate-source voltage



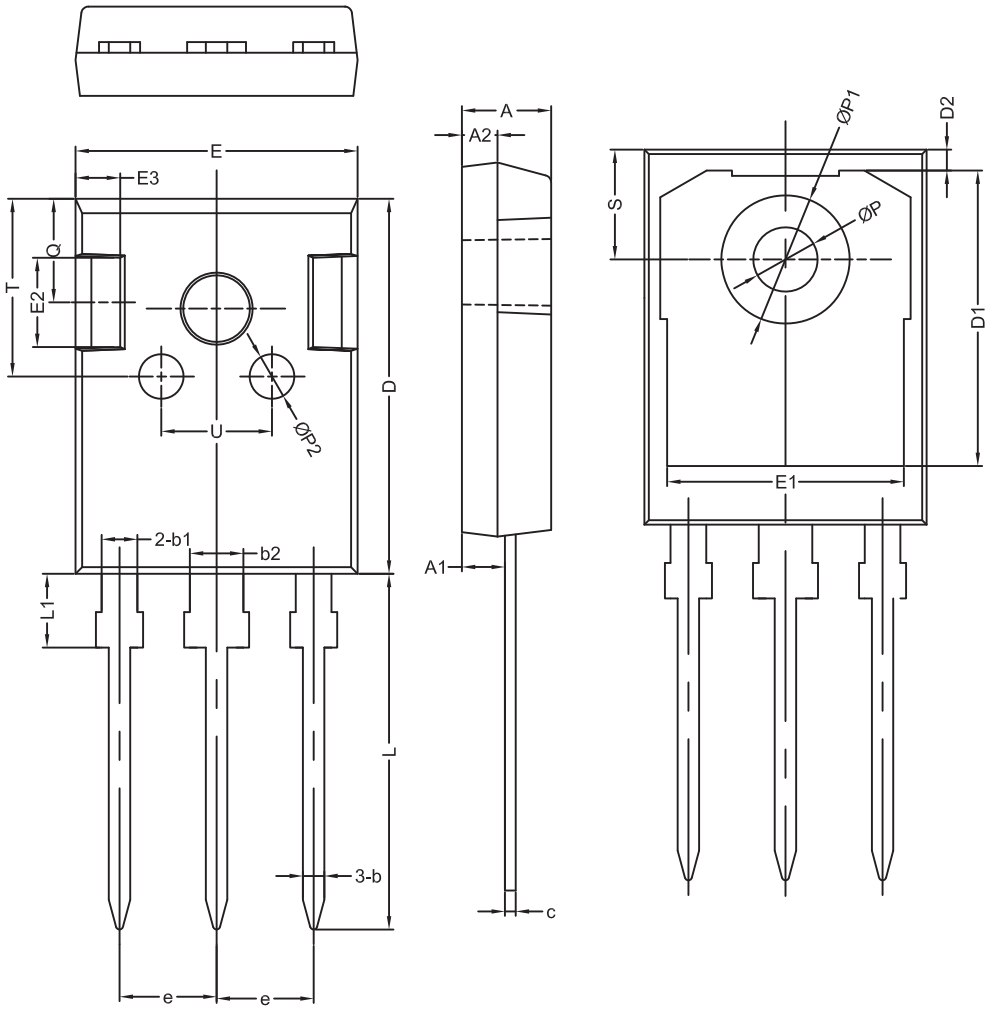
Capacitance Characteristics



Body-Diode Characteristics

Package Dimension

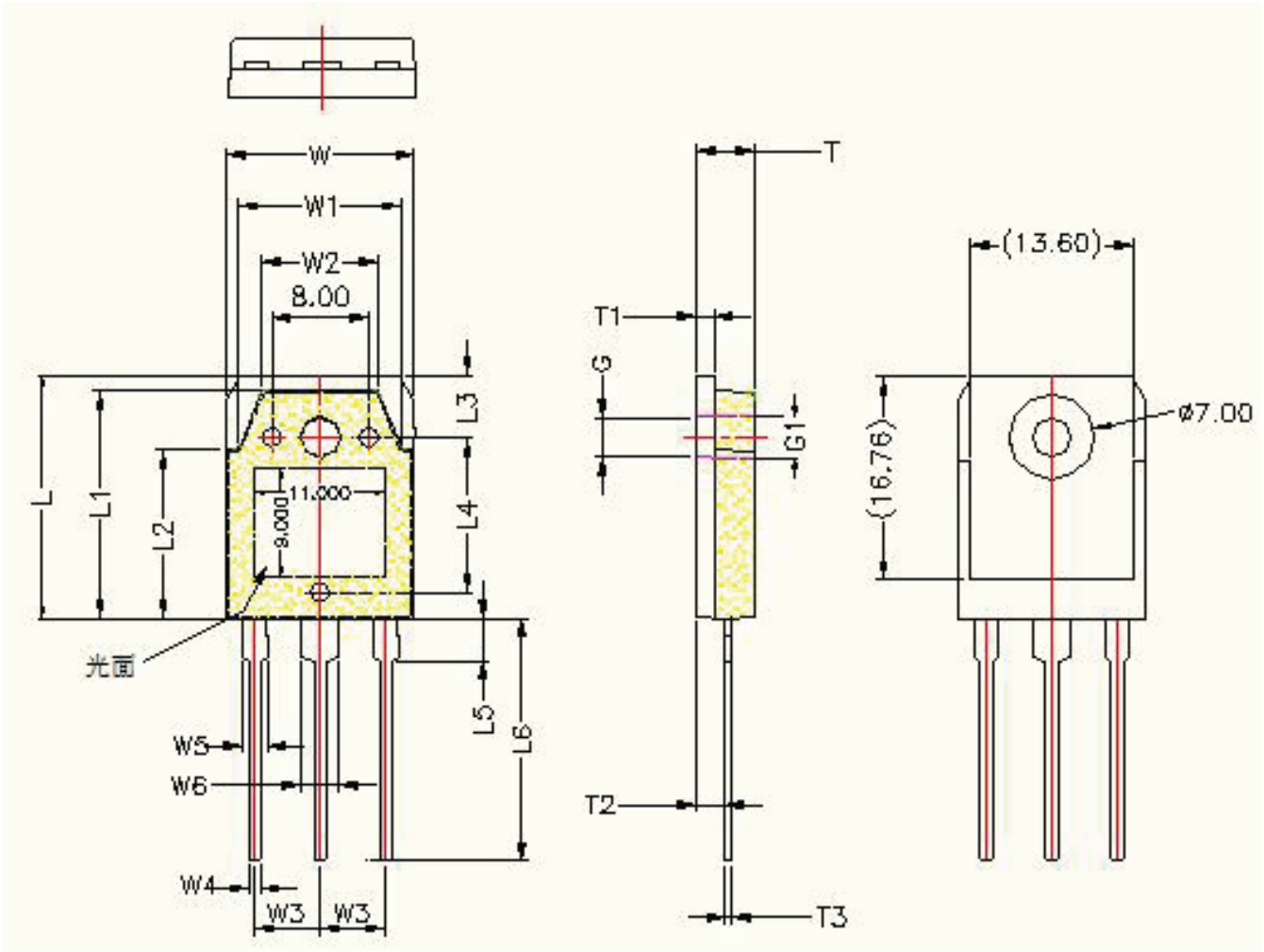
TO-247 Unit :mm



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	

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		