CMSL65R080SD

650V, 72mΩ typ., 50A N-Channel Super Junction Power MOSFET

General Description

The CMSL65R080SD 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	80mΩ	50A

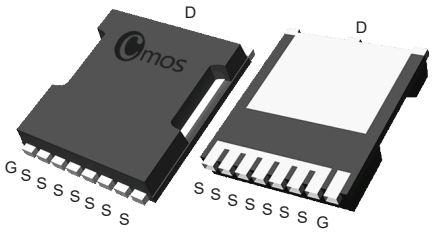
Applications

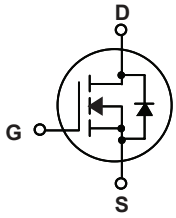
- Charger
- Power Supply

Features

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

TOLL-8 Pin Configuration





TOLL-8
CMSL65R080SD

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	50	A
I_D@T_C=100℃	Continuous Drain Current	31	A
I_{DM}	Pulsed Drain Current	200	A
EAS	Single Pulse Avalanche Energy (Note 1)	1500	mJ
P_D@T_C=25℃	Total Power Dissipation	300	W
T_{STG}	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient	---	94	℃/W
$R_{\theta JC}$	Thermal Resistance Junction-case	---	0.42	℃/W

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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=20A	---	72	80	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	---	---	±250	nA
gfs	Forward Transconductance	V_{DS}=10V , I_D =20A	---	21	---	S
R_g	Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	---	7	---	Ω
Q_g	Total Gate Charge	V_{DS} =480V , I_D=21.5A V_{GS}=10V	---	76	---	nC
Q_{gs}	Gate-Source Charge		---	21	---	
Q_{gd}	Gate-Drain Charge		---	43	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DD}=400V , I_D =21.5A R_G =27Ω , V_{GS}=10V	---	83	---	ns
T_r	Rise Time		---	105	---	
$T_{d(off)}$	Turn-Off Delay Time		---	243	---	
T_f	Fall Time		---	98	---	
C_{iss}	Input Capacitance	V_{DS}=100V , V_{GS}=0V , f=1MHz	---	2450	---	pF
C_{oss}	Output Capacitance		---	130	---	
C_{rss}	Reverse Transfer Capacitance		---	4	---	

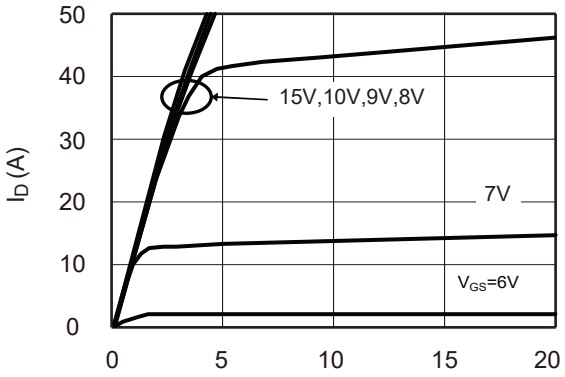
Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	V_G=V_D=0V , Force Current	---	---	50	A
I_{SM}	Pulsed Source Current		---	---	200	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_S=40A ,T_J=25℃	---	1	1.5	V
t_{rr}	Reverse Recovery Time	di/dt = 100A/μs V_{DD}=400V , I_{SD}=21.5A	---	160	---	ns
Q_{rr}	Reverse Recovery Charge		---	0.66	---	μC

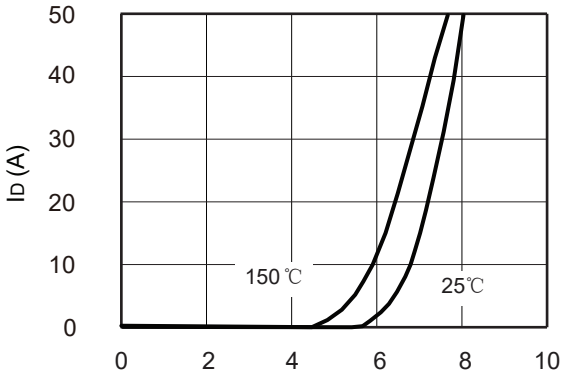
Note :

1. The EAS data shows Max. rating . The test condition is V_{DD}=100V , V_{GS}=10V , L=30mH , I_{AS} =10A.

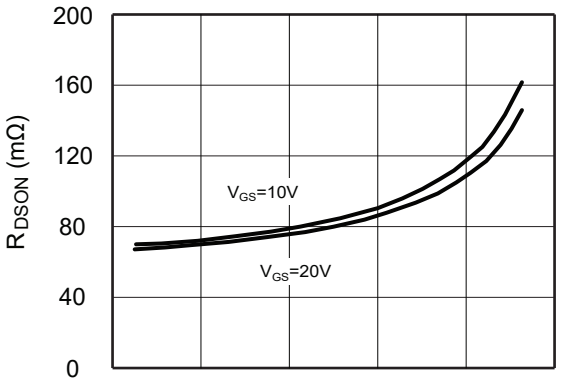
Typical Characteristics



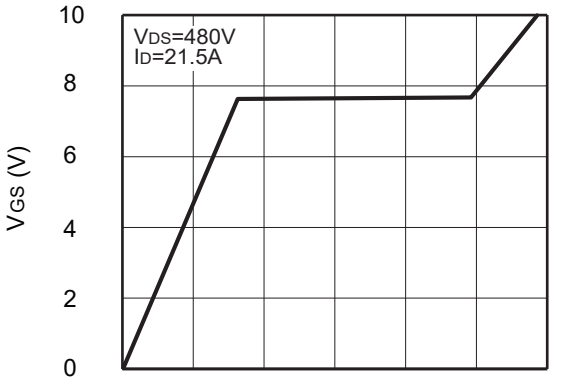
Output Characteristics



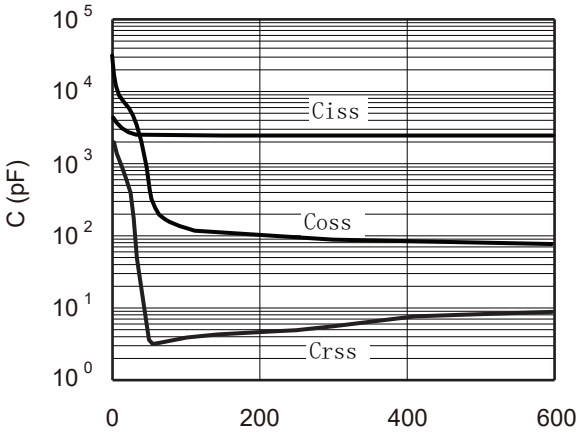
transfer characteristics



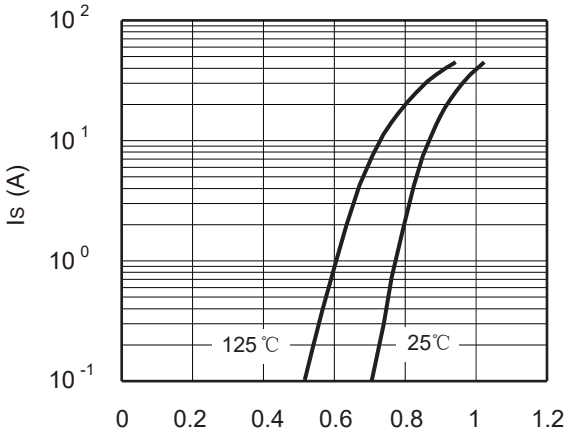
On-Resistance vs. Drain Current



Gate charge vs gate-source voltage

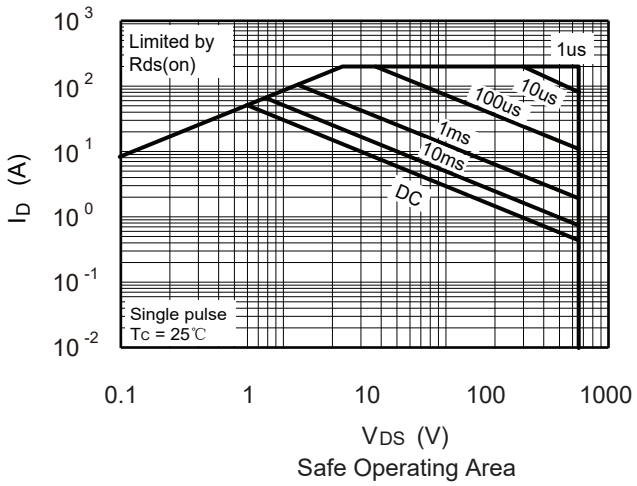


Capacitance Characteristics

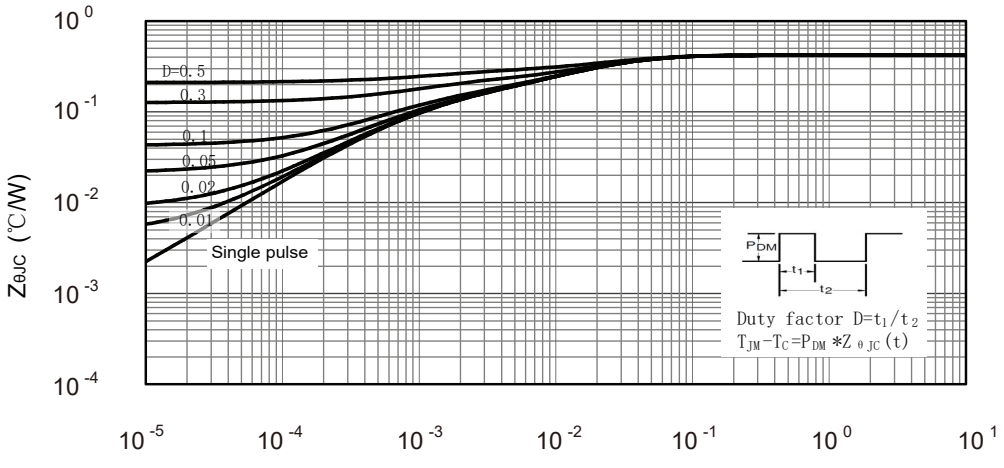


Body-Diode Characteristics

Typical Characteristics



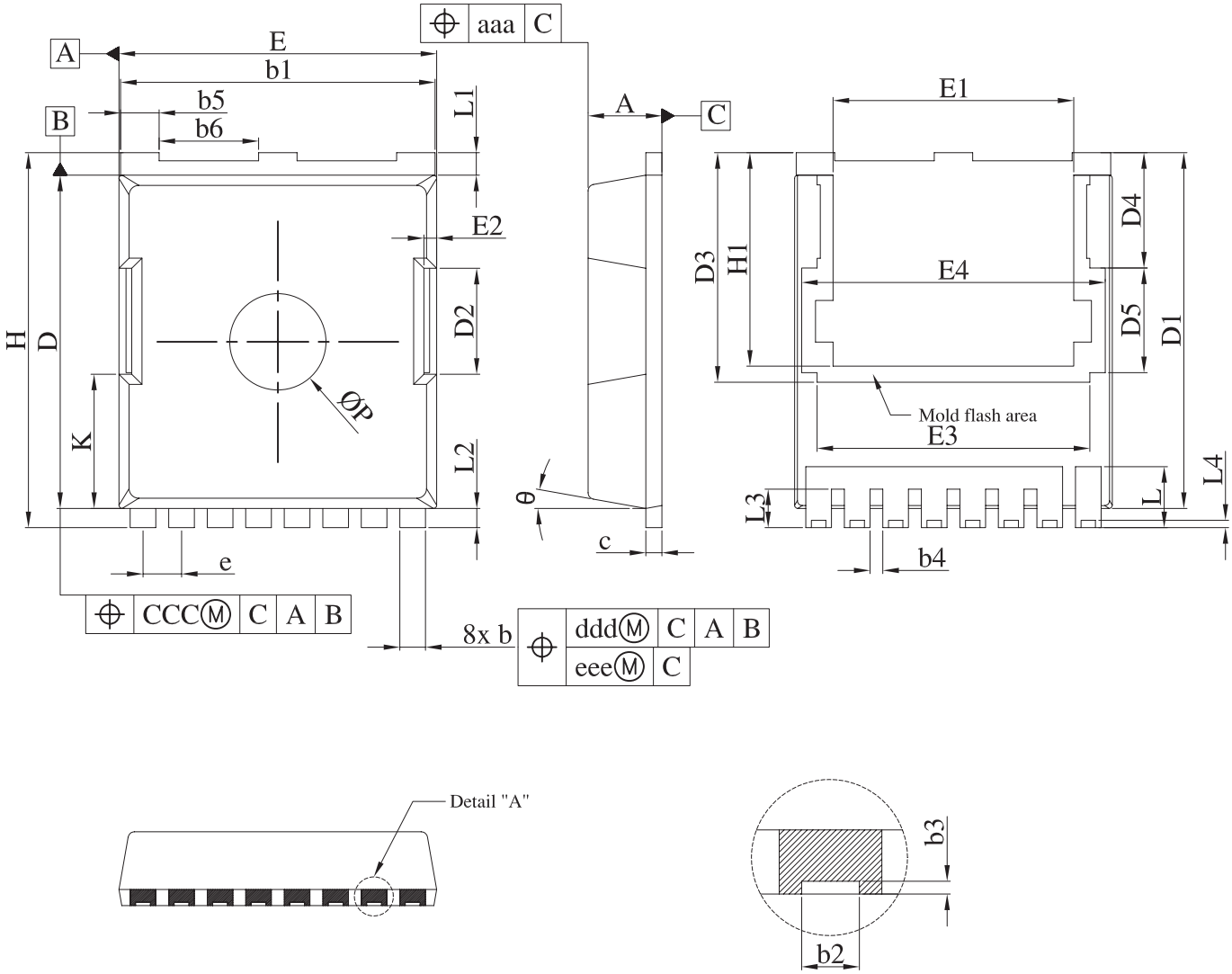
Safe Operating Area



Transient thermal impedance

Package Dimension

TOLL-8 Unit :mm



SYMBOL		A	b	b1	b2	b3	b4	b5	b6	c	D	D1	D2	D3	D4	D5	e	E	E1
MILLIMETER	MIN.	2.2	0.7	9.7	0.36	0.05	0.3	1.1	3	0.4	10.28	10.98	3.2	7.15	3.59	3.26	1.1	9.8	7.4
	TYP.	2.3	0.8	9.8	0.45	0.1	0.4	1.2	3.1	0.5	10.38	11.08	3.3				1.2	9.9	7.5
	MAX.	2.4	0.9	9.9	0.55	/	0.5	1.3	3.2	0.6	10.55	11.18	3.4				1.3	10	7.6

SYMBOL		E2	E3	E4	H	H1	K	L	L1	L2	L3	L4	P	θ	aaa	ccc	ddd	eee	
MILLIMETER	MIN.	0.3	8.5	9.46	11.5	6.55	4.08	1.6	0.5	0.5	1	0.13	2.85	10° REF	0.2	0.2	0.25	0.2	
	TYP.	0.4			11.68	6.65	4.18	1.9	0.7	0.6	1.2	0.23	3						
	MAX.	0.5			11.85	6.75	4.28	2.1	0.9	0.7	1.3	0.33	3.15						