CMT3030S

30V N-Channel MOSFET

Description

Features

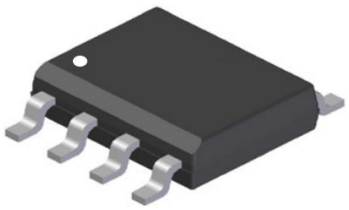
- Trench Power LV MOSFET technology
- Excellent package for heat dissipation
- High density cell design for low RDS(ON)

Application

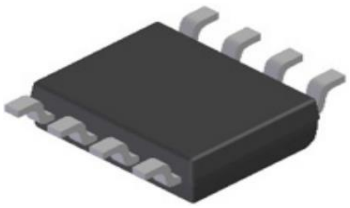
- High current load application
- Load switching
- Quick Charge

V_{DS}	30	V
$R_{ds(on),typ}$@V_{gs}=10V	7.5	mΩ
$R_{ds(on),typ}$@V_{gs}=4.5V	9	mΩ
I_D	30	A

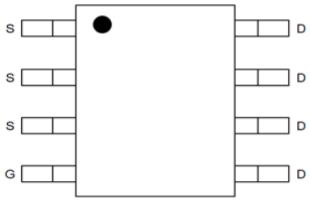
Top View



Bottom View



Pin Configuration



Package Marking and Ordering Information

Part	Marking	Package	Packing	Reel Size	Tape Width	Qty
CMT3030S	T3030S	SOP-8L	Reel	NA	NA	4000

Key Performance Parameters

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-Source Voltage	±20	V
ID@Tc=25℃	Continuous Drain Current, V_{GS}=10V	30	A
ID@Tc=100℃	Continuous Drain Current, V_{GS}=10V	25	A
IDM	Pulsed Drain Current[1]	120	A
PD@Tc=25℃	Total Power Dissipation	25	W
T_{STG}	Storage Temperature Range	-55 to 150	℃
T_j	Operating Junction Temperature Range	-55 to 150	℃

Thermal Data

Symbol	Parameter	Typ	Max	Units
$R_{\theta JA}$	Thermal Resistance Junction-Ambient	45	50	℃/W
$R_{\theta JC}$	Thermal Resistance Junction-Case	4.5	5	℃/W

Electrical Characteristics (T_J=25 ℃, Unless otherwise noted)

Symbol	Parameter	Values			Unit	Note / Test Condition
		Min.	Typ.	Max.		
BVDSS	Drain-Source Breakdown Voltage	30	--	--	V	V_{GS}=0V, I_D=250uA
$R_{DS(ON)}$	Static Drain-Source On-Resistance	--	7.5	12	mΩ	V_{GS}=10V, I_D=20A
		--	9	15		V_{GS}=4.5V, I_D=10A
$V_{GS(th)}$	Gate Threshold Voltage	1	1.6	2.5	V	V_{GS}=V_{DS}, I_D=250uA
IDSS	Drain-Source Leakage Current	--	--	1	uA	V_{DS}=30V, V_{GS}=0V, T_J=25℃
		--	--	10	uA	V_{DS}=24V, V_{GS}=0V, T_J=125℃
IGSS	Gate-Source Leakage Current	--	--	±100	nA	V_{GS}=±20V, V_{DS}=0V
gfs	Forward Transconductance	--	15	--	S	V_{DS}=5V, I_D=20A
Qg	Total Gate Charge [2,3]	--	28	--	nC	V_{DS}=15V, V_{GS}=10V, I_D=20A
Qgs	Gate-Source Charge[2,3]	--	7	--		
Qgd	Gate-Drain Charge[2,3]	--	5	--		
$Td_{(on)}$	Turn-On Delay Time[2,3]	--	8	--	ns	V_{DD}=15V, V_{GS}=10V, R_G=3Ω I_D=20A
T_r	Rise Time[2,3]	--	15	--		
$Td_{(off)}$	Turn-Off Delay Time[2,3]	--	27	--		
T_f	Fall Time[2,3]	--	7	--		
Ciss	Input Capacitance	--	950	--	pF	V_{DS}=15V, V_{GS}=0V, f=1MHz
Coss	Output Capacitance	--	210	--		
Crss	Reverse Transfer Capacitance	--	123	--		

Diode Characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Is	Continuous Source Current[1]	VG=VD=0V, Force Current	--	--	30	A
Ism	Pulsed Source Current[2]		--	--	120	A
V_{SD}	Diode Forward Voltage[2]	VGS=0V, I_S=20A, TJ=25℃	--	--	1.2	V

Note:

1. Repetitive Rating: Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed, pulse width ≦ 300us, duty cycle ≦ 2%.
3. Essentially independent of operating temperature.

Typical Performance Characteristics

Fig1 Output Characteristics

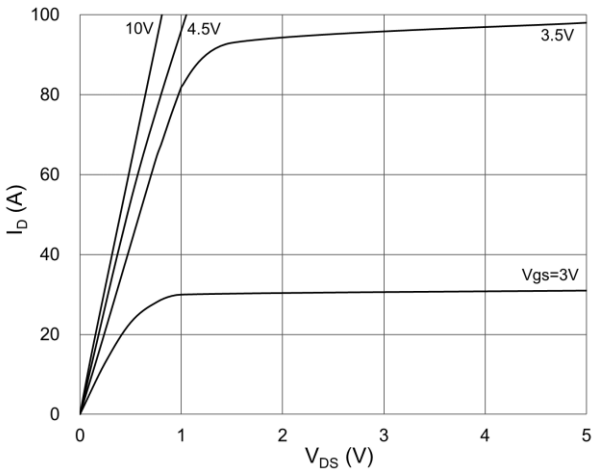


Fig2 Normalized R_{DSON} vs. T_J

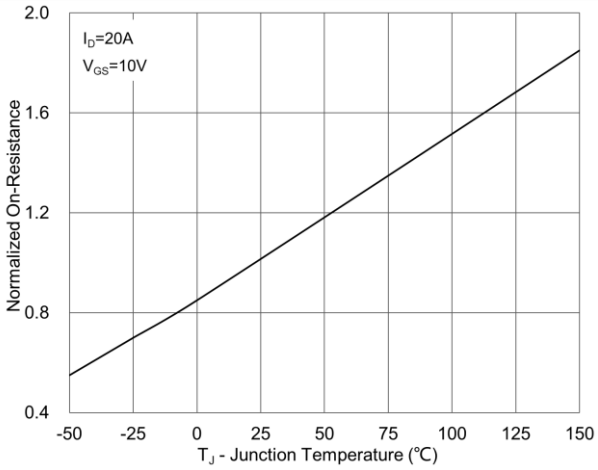


Fig3 Gate Charge Waveform

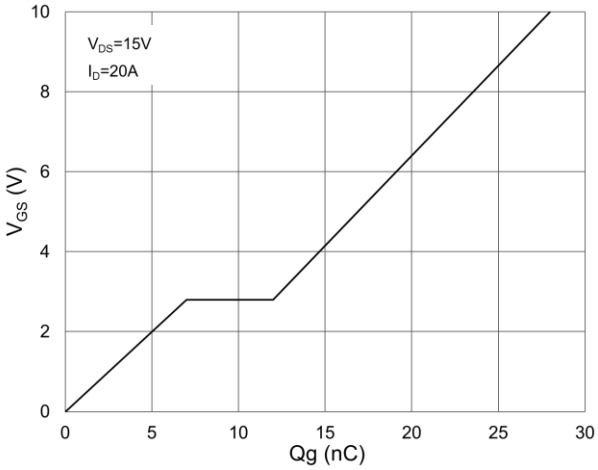


Fig4 Transfer Characteristics

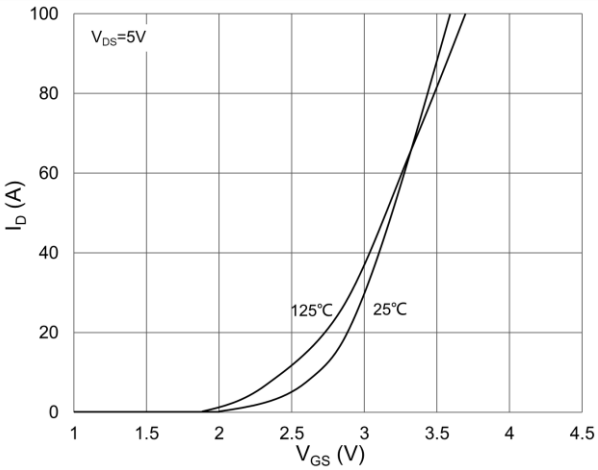


Fig5 Rds(on) vs. Drain Current and Gate Voltage

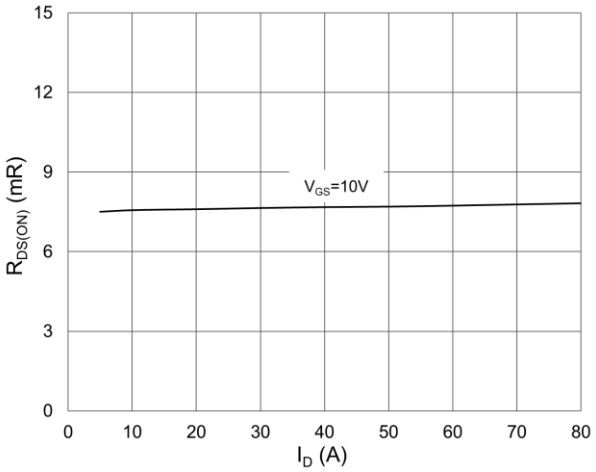


Fig6 Capacitance Characteristics

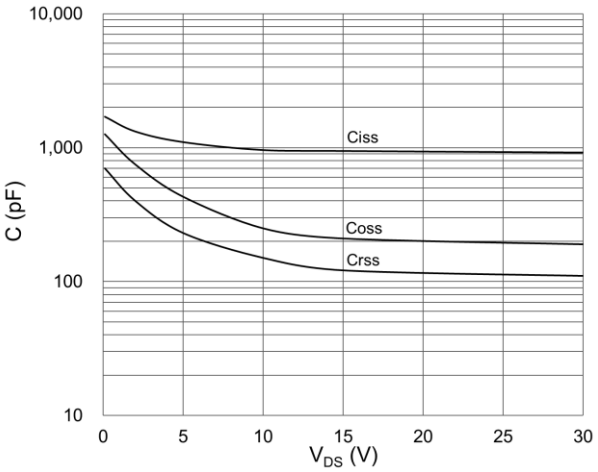


Fig7 Drain Current Derating

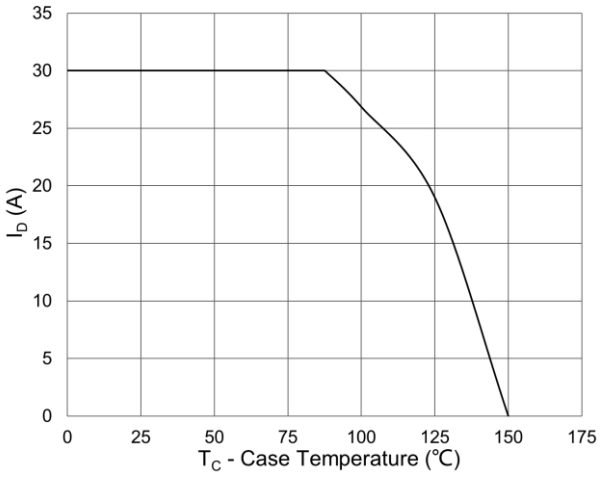


Fig8 Power Dissipation

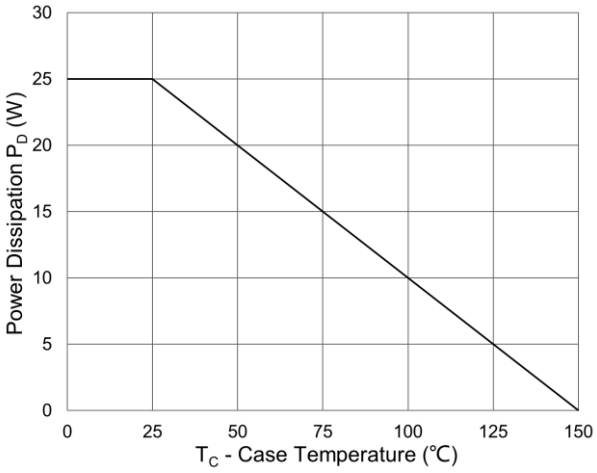


Fig9 Maximum Safe Operation Area

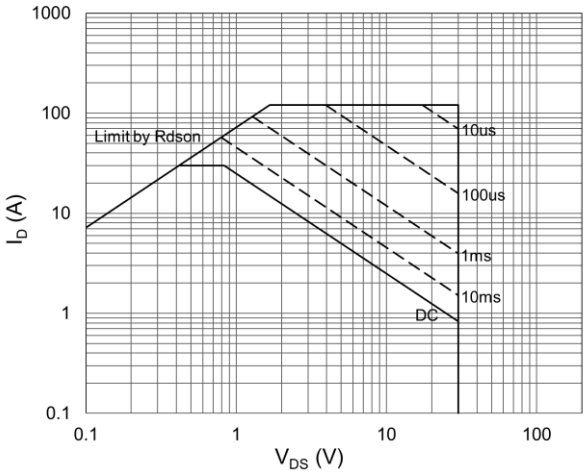
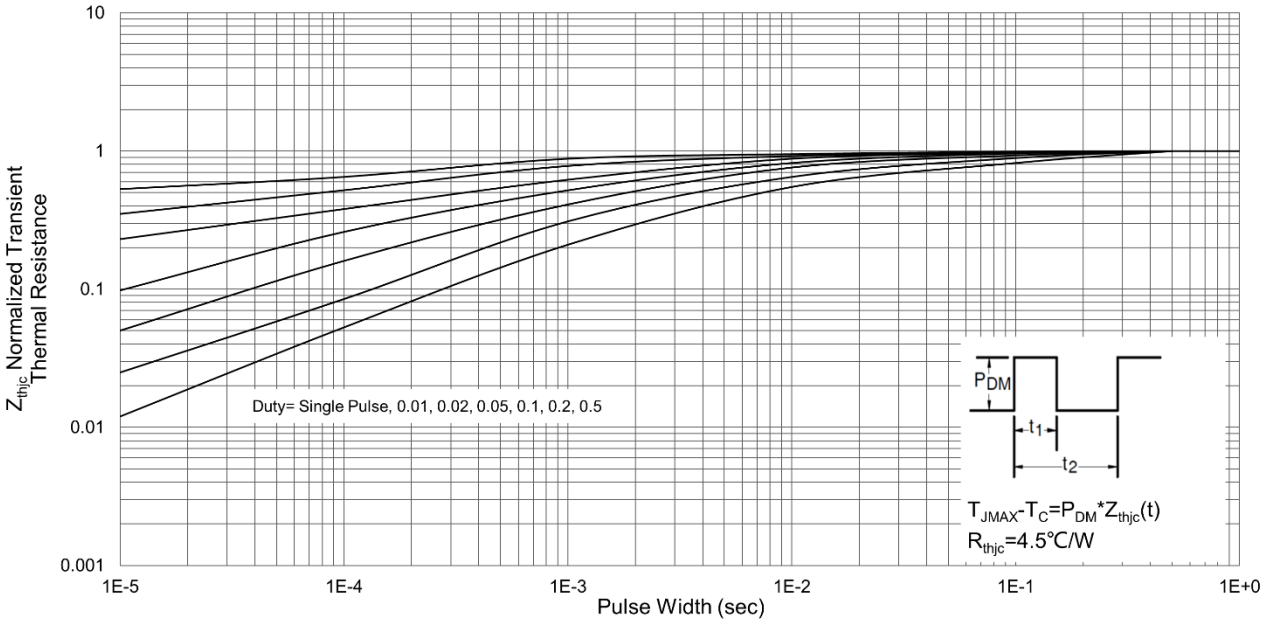
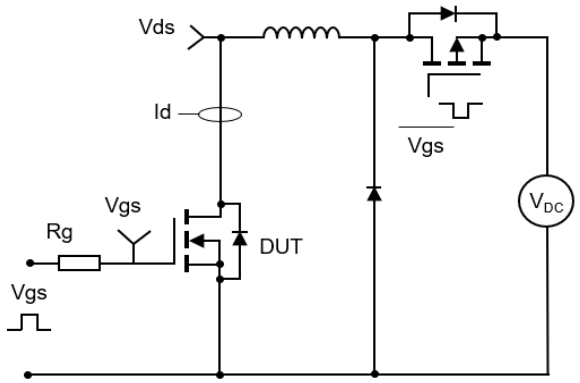


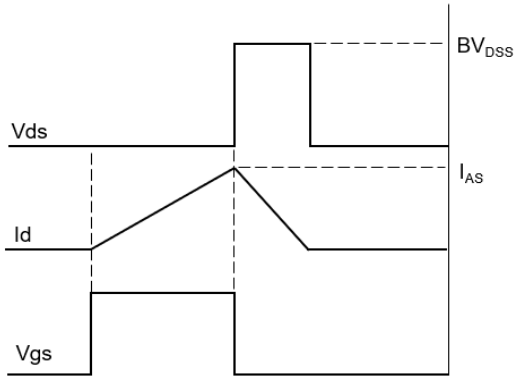
Fig10 Normalized Transient Impedance



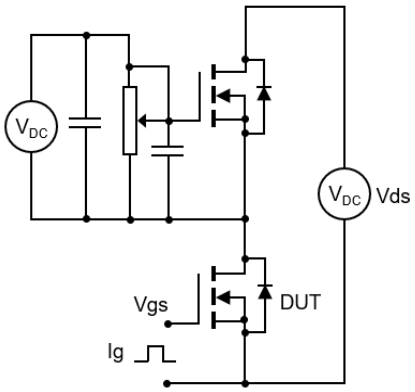
Test Circuit & Waveform

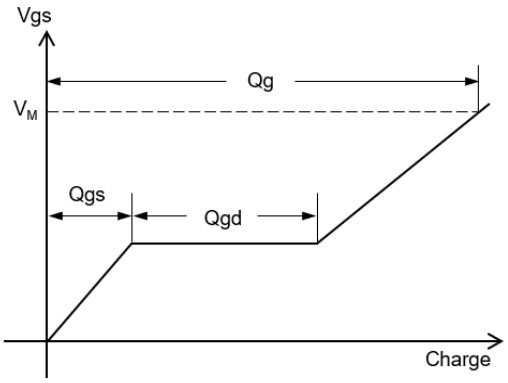
1. Unclamped Inductive Switching Test Circuit & Waveform



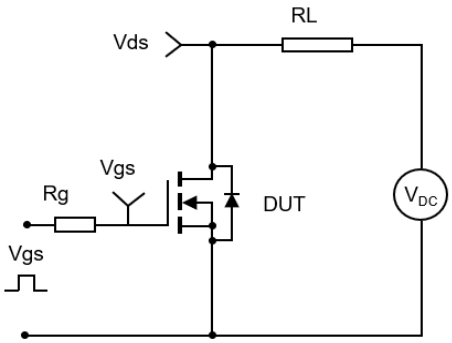


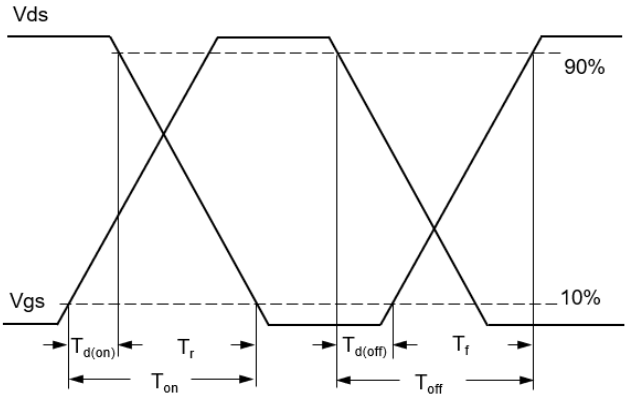
2. Gate Charge Test Circuit & Waveform





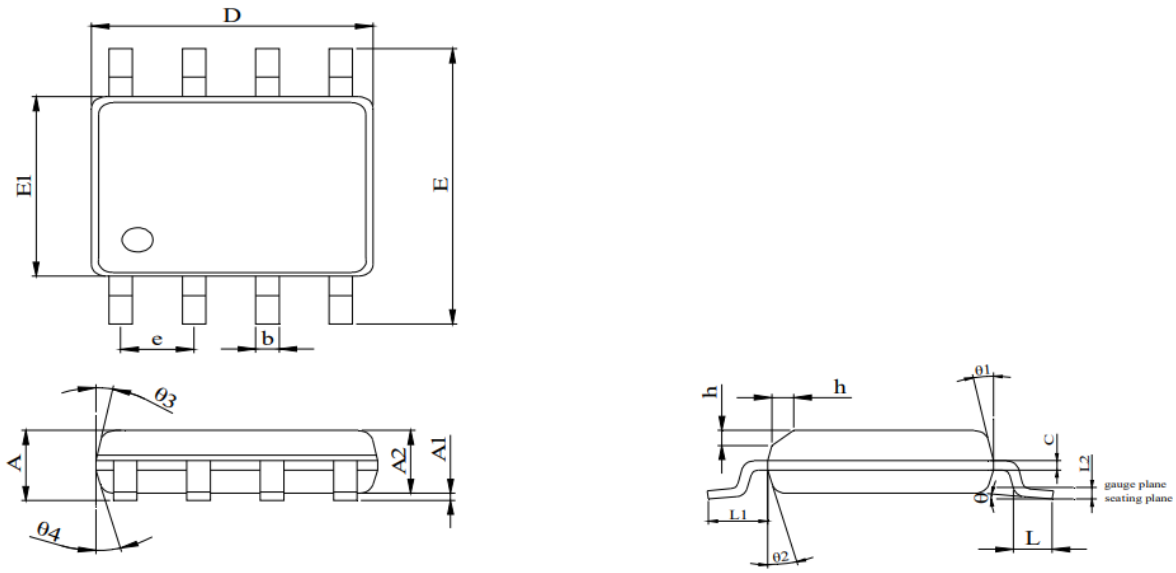
3. Resistive Switching Test Circuit & Waveform





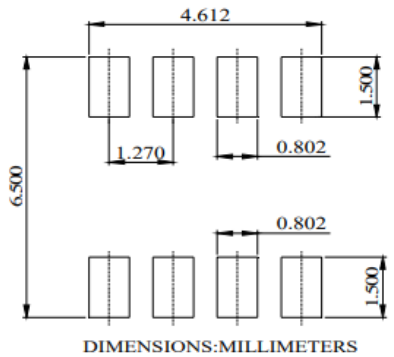
SOP-8L Package Information

Package Outline



DIM	MILIMETER		
	MIN	MOM	MAX
A	1.35	1.50	1.65
A1	0.05	0.10	0.15
A2	1.35	1.40	1.55
b	0.38	--	0.50
c	0.17	--	0.25
D	4.70	4.90	5.10
E	5.80	6.00	6.20
E1	3.80	3.90	4.00
e	1.27(BSC)		
L	0.45	0.60	0.80
L1	1.04 REF		
L2	0.25BSC		
h	0.30	0.40	0.50
θ	0°	--	8°
θ1	10°	12°	14°
θ2	8°	10°	12°
θ3	10°	12°	14°
θ4	8°	10°	12°

Recommend Soldering Footprint



DIMENSIONS:MILLIMETERS