CMS028H10G

100V N-Channel SGT

Description

Features

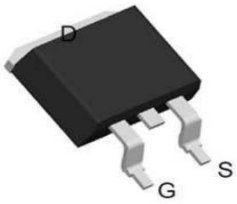
- SGT LV MOSFET technology
- Excellent Qg*Ron product(FOM)
- Extremely low on-resistance(Ron)

Application

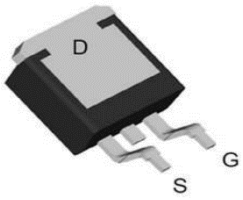
- Battery management
- High current switching
- UPS

V_{DS}	100	V
$R_{ds(on),typ}$@V_{gs}=10V	2.4	mΩ
I_D	180	A

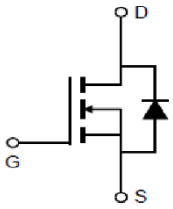
Top View



Bottom View



Pin Configuration



Package Marking and Ordering Information

Part	Marking	Package	Packing	Reel Size	Tape Width	Qty
CMS028H10G	S028H10G	TO-263	Reel	NA	NA	800pcs

Key Performance Parameters

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	100	V
V_{GS}	Gate-Source Voltage	±20	V
ID@Tc=25℃	Continuous Drain Current, VGS=10V	180	A
ID@Tc=100℃	Continuous Drain Current, VGS=10V	135	A
IDM	Pulsed Drain Current	720	A
EAS	Single Pulse Avalanche Energy	1120	mJ
PD@Tc=25℃	Total Power Dissipation	250	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	56	62.5	℃/W
$R_{\theta JC}$	Thermal Resistance Junction-Case	0.45	0.5	℃/W

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

Symbol	Parameter	Values			Unit	Note / Test Condition
		Min.	Typ.	Max.		
BVDSS	Drain-Source Breakdown Voltage	100	--	--	V	VGS=0V, ID=250uA
RDS(ON)	Static Drain-Source On-Resistance	--	2.4	2.8	mΩ	VGS=10V, ID=50A
VGS(th)	Gate Threshold Voltage	2	3	4	V	VGS=VDS, ID=250uA
IDSS	Drain-Source Leakage Current	--	--	1	uA	VDS=100V, VGS=0V, TJ=25℃
		--	--	100	uA	VDS=80V, VGS=0V, TJ=125℃
IGSS	Gate-Source Leakage Current	--	--	±100	nA	VGS=±20V, VDS=0V
gfs	Forward Transconductance	--	39	--	S	VDS=5V, ID=50A
Rg	Gate Resistance	--	1.2	--	Ω	VDS=0V, VGS=0V, f=1MHz
Qg	Total Gate Charge	--	133	--	nC	VDS=50V, VGS=10V, ID=90A
Qgs	Gate-Source Charge	--	44	--		
Qgd	Gate-Drain Charge	--	38	--		
Td(on)	Turn-On Delay Time	--	30	--	ns	VDD=50V, VGS=10V, RG=1.6Ω ID=50A
Tr	Rise Time	--	40	--		
Td(off)	Turn-Off Delay Time	--	80	--		
Tf	Fall Time	--	35	--		
Ciss	Input Capacitance	--	8480	--	pF	VDS=50V, VGS=0V, f=1MHz
Coss	Output Capacitance	--	2074	--		
Crss	Reverse Transfer Capacitance	--	48	--		

Diode Characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Trr	Body Diode Reverse Recovery Time	IF=50A, di/dt=100A/us	--	80	--	ns
Qrr	Body Diode Reverse Recovery Charge		--	195	--	nC
V_{SD}	Diode Forward Voltage	VGS=0V, I_S=50A, TJ=25℃	--	--	1.4	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.
4.The EAS data shows Max. rating. The test condition is V_{DD}=50V, V_{GS}=10V, L=0.5mH.

Typical Performance Characteristics

Fig1 Output Characteristics

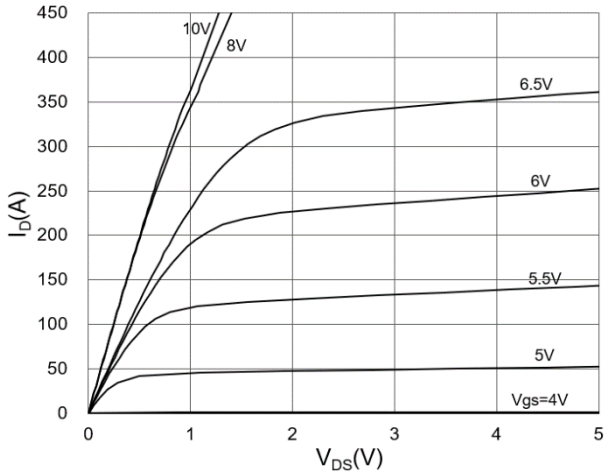


Fig2 Normalized R_{DSON} vs TJ

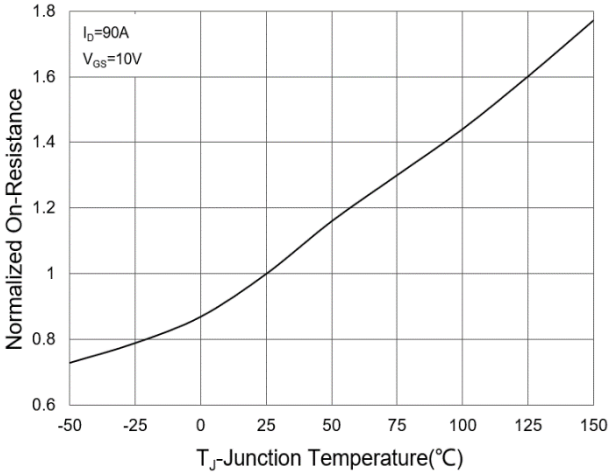


Fig3 Gate Charge Waveform

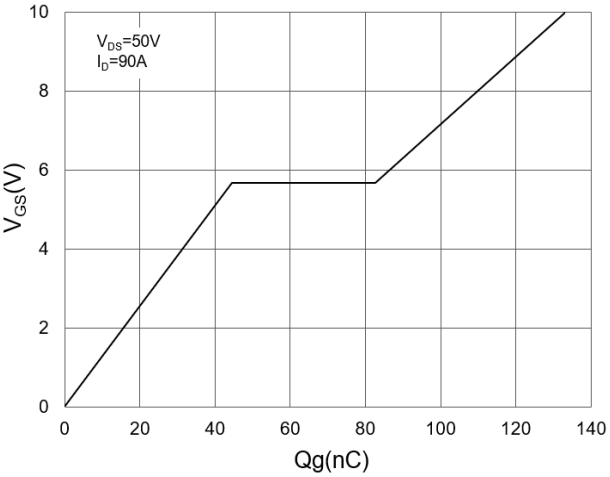


Fig4 Transfer Characteristics

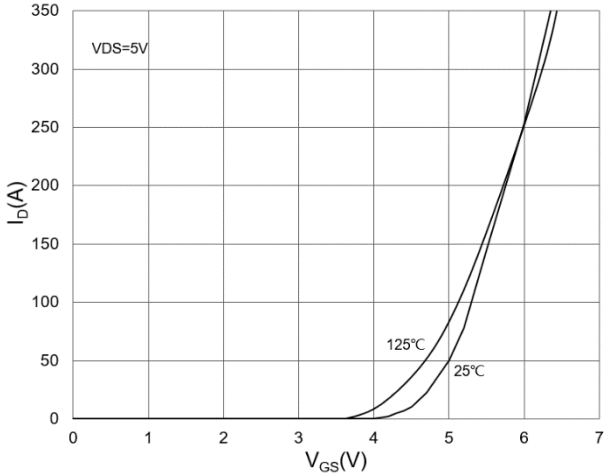


Fig5 Rds(on) vs Drain Current and Gate Voltage

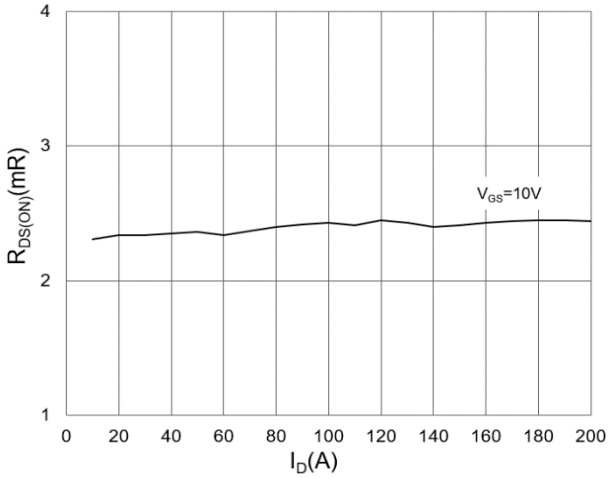


Fig6 Capacitance Characteristics

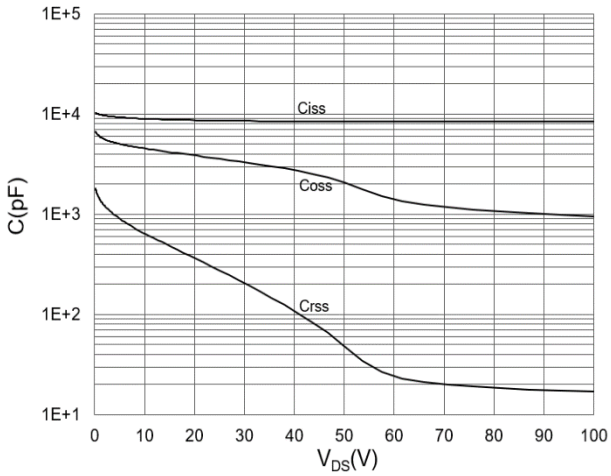


Fig7 Power Dissipation

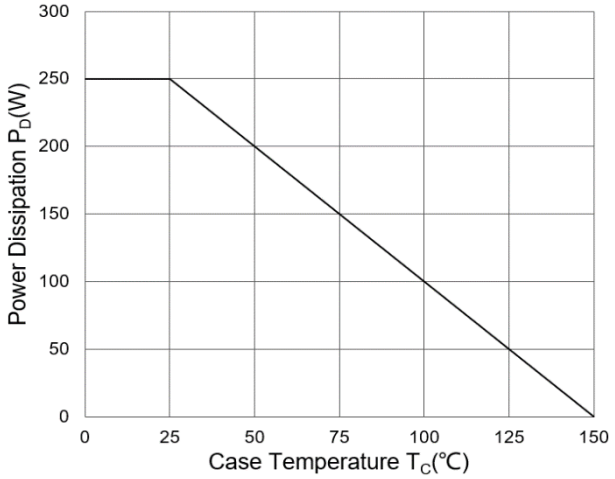


Fig8 Maximum Safe Operation Area

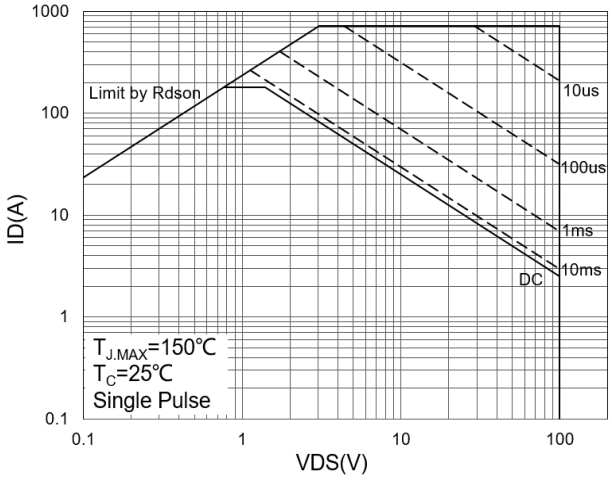


Fig9 Normalized Transient Impedance

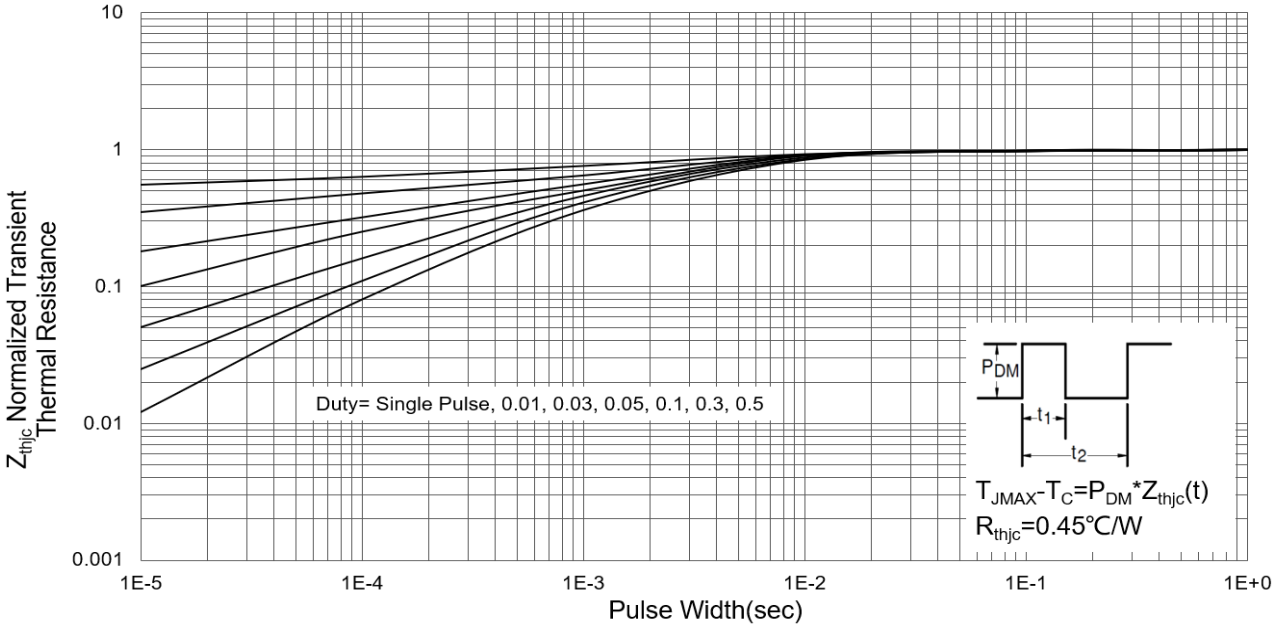


Fig10 Switching Time Waveform

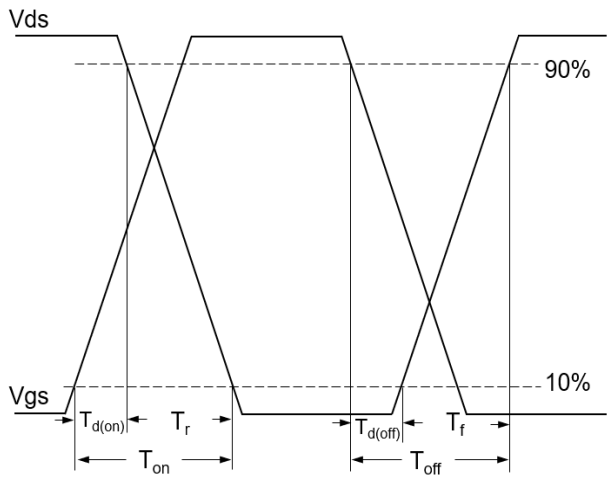
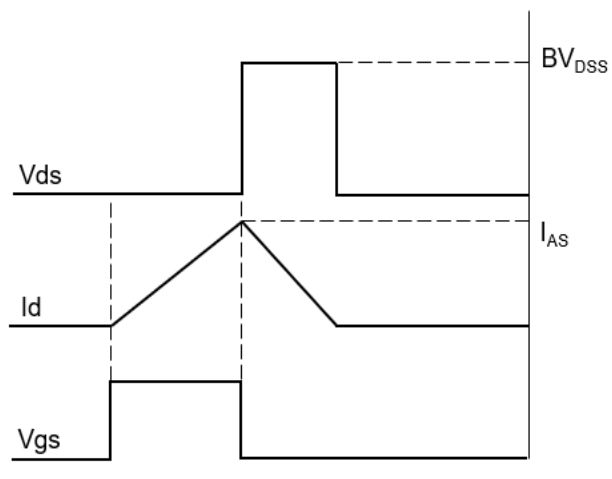
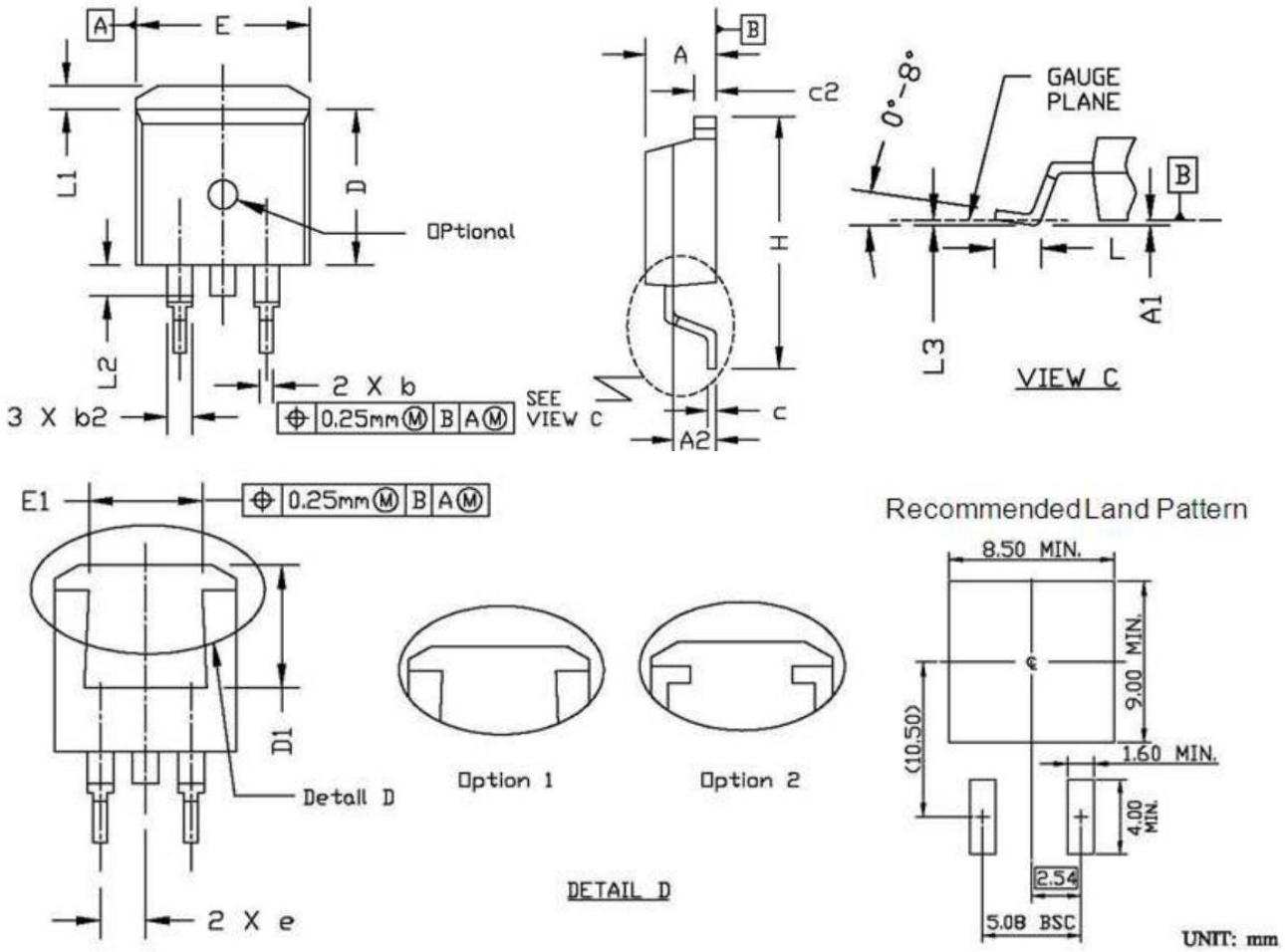


Fig11 EAS Waveform



TO263 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.30	4.86	0.169	0.191
A1	0.00	0.25	0.000	0.010
A2	2.34	2.79	0.092	0.110
b	0.68	0.94	0.027	0.037
b2	1.15	1.35	0.045	0.053
c	0.33	0.65	0.013	0.026
c2	1.17	1.40	0.046	0.055
D	8.38	9.45	0.330	0.372
D1	6.90	8.17	0.272	0.322
e	2.54 BSC.		0.100 BSC.	
E	9.78	10.50	0.385	0.413
E1	6.50	8.60	0.256	0.339
H	14.61	15.88	0.575	0.625
L	2.24	3.00	0.088	0.118
L1	0.70	1.60	0.028	0.063
L2	1.00	1.78	0.039	0.070
L3	0.00	0.25	0.000	0.010