

Description

The SIA4263DJ-T1-GE3 is the new generation advanced trench P-channel MOSFET has been designed to minimize the on-state resistance ($R_{DS(ON)}$) yet maintain superior switching performance, making it ideal for high efficiency power management applications

Features

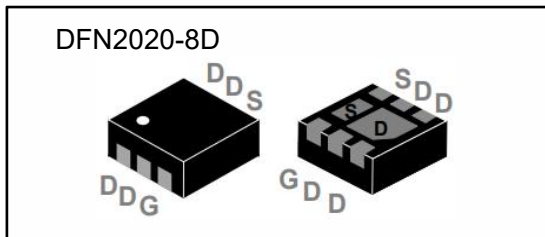
- High - speed switching
- Excellent gate charge x $R_{DS(ON)}$ product (FOM)
- for extremely low $R_{DS(ON)}$
- Lead-Free, Halogen-Free; RoHS Compliant

Applications

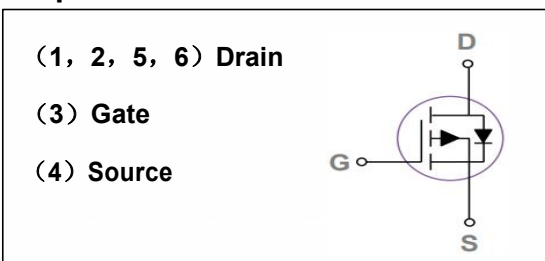
- DC/DC Converter
- Load Switch
- Power Management

V_{DSS}	-20V
I_D	-8.5A
$R_{DS(ON)}$	22mΩ @ $V_{GS} = -4.5V$
$R_{DS(ON)}$	28mΩ @ $V_{GS} = -2.5V$

Outline



Equivalent



Packaging specifications

Part No.	Package	Marking	Basic ordering unit.(pcs)
SIA4263DJ-T1-GE3	DFN2020-8D		3000

Absolute Maximum Ratings

Parameter		Symbol	Limit	Units
Drain-Source Voltage		V_{DS}	-20	V
Gate-Source Voltage		V_{GS}	±12	V
Drain Current-Continuous ^(Note2)	$T_C = 25^\circ C$	I_D	-8.5	A
	$T_C = 70^\circ C$		-6.8	A
-Pulsed ^(Note 1- Note 2)		I_{DM}	-34	A
Maximum Power Dissipation	$T_C = 25^\circ C$	P_D	1.25	W
	$T_C = 70^\circ C$		1.0	W
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55 to 150	°C
Thermal Resistance Junction-Ambient		$R_{\theta JA}$	62	°C /W
Thermal Resistance Junction-Case		$R_{\theta JC}$	38	°C/W

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V , I _D =250uA	-20			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-20V , V _{GS} =0V			-1	uA
Gate-Body Leakage Current	I _{GSS}	V _{GS} = ±12V , V _{DS} =0V			±100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D =-250uA	-0.4	-0.65	-1.2	V
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =-4.5V , I _D =-3A		22	28	mΩ
		V _{GS} =-2.5V , I _D =-2A		28	40	mΩ
Forward Transconductance	g _{FS}	V _{DS} =-10V , I _D =-1A		4		S
DYNAMIC CHARACTERISTICS Note4						
Input Capacitance	C _{ISS}	V _{DS} =-10V , V _{GS} =0 V , f =1.0MHz		1440		pF
Output Capacitance	C _{OSS}			155		pF
Reverse Transfer Capacitance	C _{RSS}			115		pF
Total Gate Charge	Q _g	V _{DS} =-10V , I _D =-4A , V _{GS} =-4.5V		16		nC
Gate-Source Charge	Q _{gs}	V _{DS} =-10V , I _D =-4A , V _{GS} =-4.5V		1.8		nC
Gate-Drain Charge	Q _{gd}			3.8		nC
SWITCHING CHARACTERISTICS Note4						
Turn-On Delay Time	t _{D(ON)}	V _{DD} =-10V , I _D =-1A , V _{GS} =-4.5V , R _{GEN} =25Ω		8.2		ns
Rise Time	tr			30		ns
Turn-Off Delay Time	t _{D(OFF)}			71		ns
Fall Time	tf			20		ns
DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS						
Diode Forward Voltage	V _{SD}	V _{GS} =0V , I _S =-1A			-1.0	V

Notes:

- 1、Pulse Test Width < 300us,Duty Cycle< 2%
- 2、Drain current limited by maximum junction temperature.
- 3、Guaranteed by design,not subject to production testing.

Typical Performance Characteristics

Fig.1 Continuous Drain Current vs. TC

T_C , Case Temperature ($^{\circ}\text{C}$)

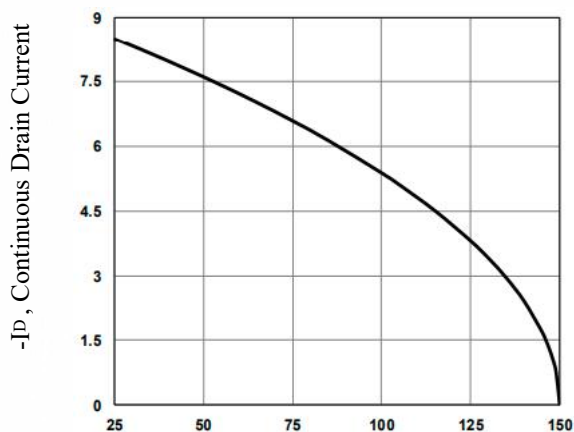


Fig.2 Normalized $R_{DS(on)}$ vs. T_J

T_J , Junction Temperature ($^{\circ}\text{C}$)

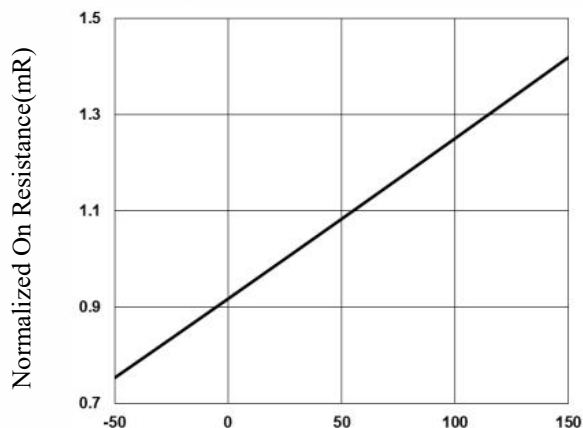


Fig.3 Normalized V_{th} vs. T_J

T_J , Junction Temperature ($^{\circ}\text{C}$)

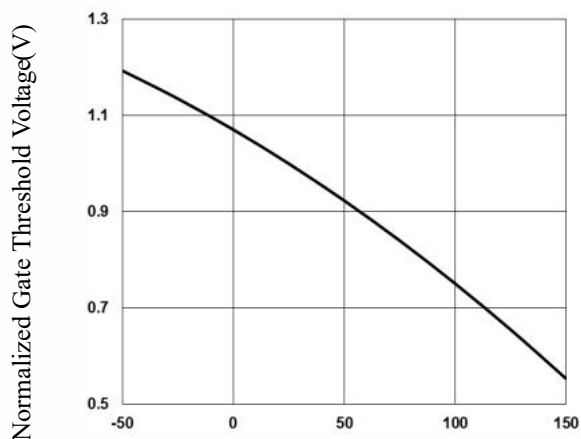


Fig.4 Gate Charge Waveform

Q_g , Gate Charge (nC)

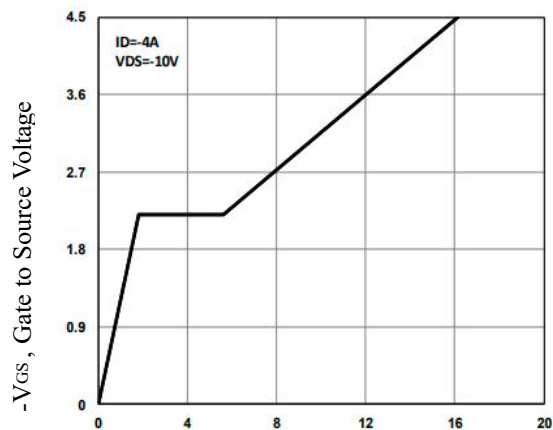


Fig.5 Normalized Transient Impedance

Square Wave Pulse Duration (s)

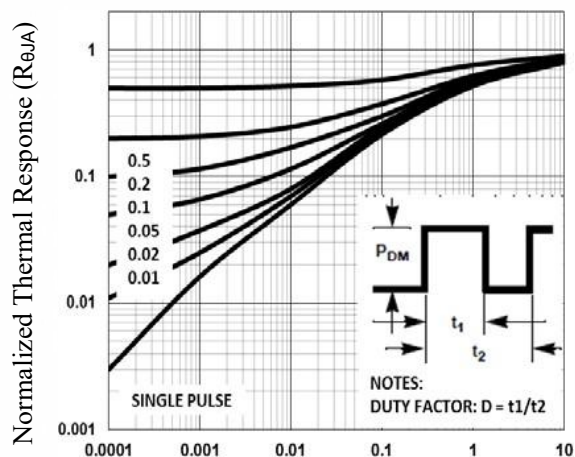


Fig.6 Maximum Safe Operation Area

$-V_{DS}$, Drain to Source Voltage (V)

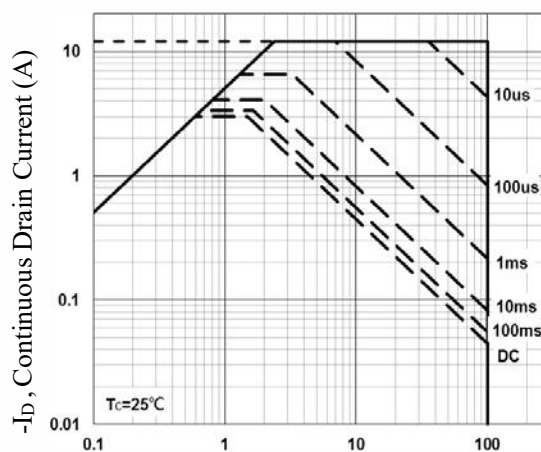


Figure 7a. Switching Test Circuit

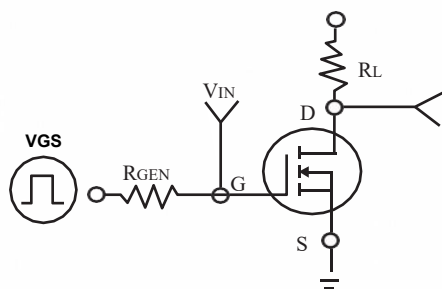
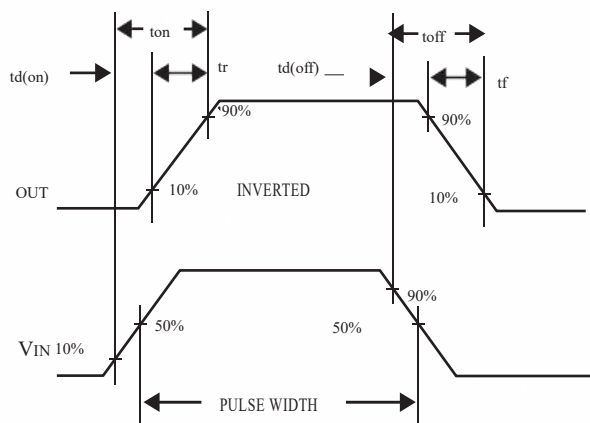
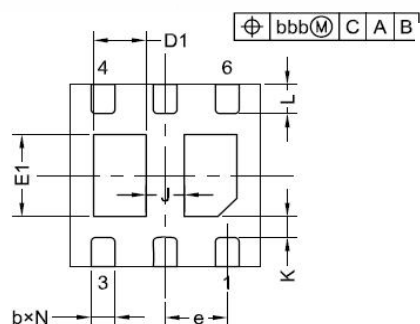


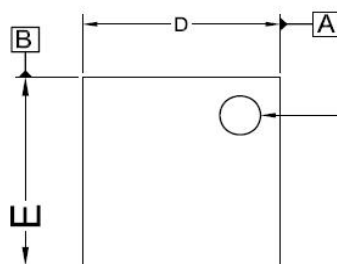
Figure 7b. Switching Waveforms



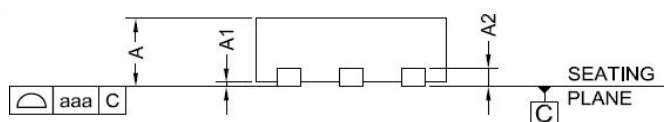
DFN2020-8D Dual Package Information



BOTTOM VIEW



TOP VIEW



SIDE VIEW

COMMON DIMENSIONS
(UNITS OF MEASURE=MILLIMETER)

SYMBOL	MIN	TYP	MAX
A	0.70	0.75	0.80
A1	0.00	0.02	0.05
A2		0.203	
b	0.20	0.25	0.30
D	1.95	2.00	2.05
D1	0.50	0.55	0.60
E	1.95	2.00	2.05
E1	0.85	0.90	0.95
e		0.65BSC	
L	0.27	0.32	0.37
J		0.40BSC	
K		0.20MIN	
N		6	
aaa		0.08	
bbb		0.10	