GOSTONE

RoHS COMPLIANT

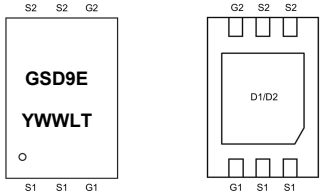
Dual N-Channel 20V,12mΩ max, Power MOSFET

GD209E

Product Summary

V_{DS} (V)	$R_{DS(on),max}$ (mΩ)	I_D (A)
20	12 @ V_{GS} = 4.5V	8

View and Internal Schematic Diagram



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DFN2030-6L

NOTE:
LOGO - GS
D9E - Part number code
Y - Year code
WW - Week code
L&T - Assembly lot code

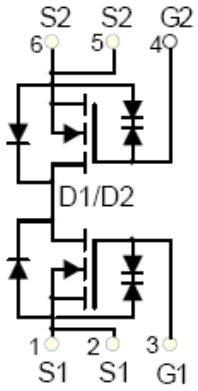
Features

- High power and current handing capability
- Lead free product is acquired
- Surface mount package
- ESD protected

Application

- Uni-directional load switch
- Bi-directional load switch

Equivalent circuit



Absolute maximum rating@25℃

Parameter	Symbol	Limit	Unit
Drain-source voltage	V_{DS}	20	V
Gate-source voltage	V_{GS}	±12	
Continuous drain current (V_{GS}=-4.5V) T_A=25℃	I_D	8	A
Pulsed drain current[d]	$I_{D,pulse}$	48	A
Power dissipation T_A=25℃	P_D	1.5	W
Operating junction and storage temperature range	T_J, T_{stg}	-55 to 150	℃

Thermal Characteristic

Parameter	Symbol	Typ.	Max.	Unit
Thermal Resistance, Junction-to-Ambient [C]	$R_{\theta JA}$	83		℃/W

Electrical Characteristics (TJ=25℃ unless otherwise noted)

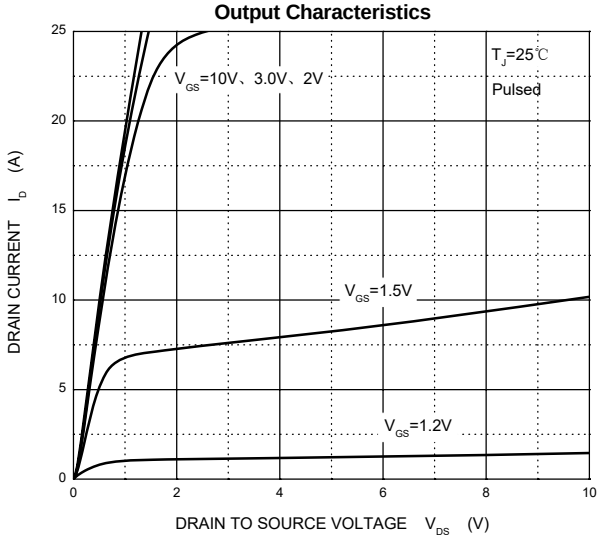
PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Static[a]						
Drain-Source Breakdown Voltage	V_{DS}	V_{GS} = 0 V, I_D = 250 µA	20			V
Gate-Source Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250 µA	0.5	0.7	0.9	V
Gate-Source Leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = ± 10 V			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 20 V, V_{GS} = 0 V			1	µA
Drain-Source On-State Resistance[a]	$R_{DS(on)}$	V_{GS} = 4.5V, I_D = 1 A		9.2	12	mΩ
		V_{GS} = 2.5V, I_D = 1 A		12	18	
Forward Transconductance[a]	g_{fs}	V_{DS} = 5 V, I_D = 8 A		35		S
Body Diode Voltage	V_{SD}	I_S = 1 A, V_{GS} = 0 V		0.8	1.1	V
Dynamic[b]						
Input Capacitance	C_{iss}	V_{DS} = 10 V, V_{GS} = 0V， f=1 MHz		1740		pF
Output Capacitance	C_{oss}			210		
Reverse Transfer Capacitance	C_{rss}			180		
Total Gate Charge	Q_g	V_{DS} = 10 V, V_{GS} = 4.5 V, I_D = 8 A		16		nC
Gate-Source Charge	Q_{gs}			1.2		
Gate-Drain Charge	Q_{gd}			3.7		
Turn-On Delay Time	$t_{d(on)}$	V_{DD} = 10 V, R_L = 1.35 Ω Vgs= 4.5 V, R_{gen} = 3 Ω		2.2		ns
Rise Time	t_r			6.9		
Turn-Off Delay Time	$t_{d(off)}$			47		
Fall Time	t_f			96		

Notes

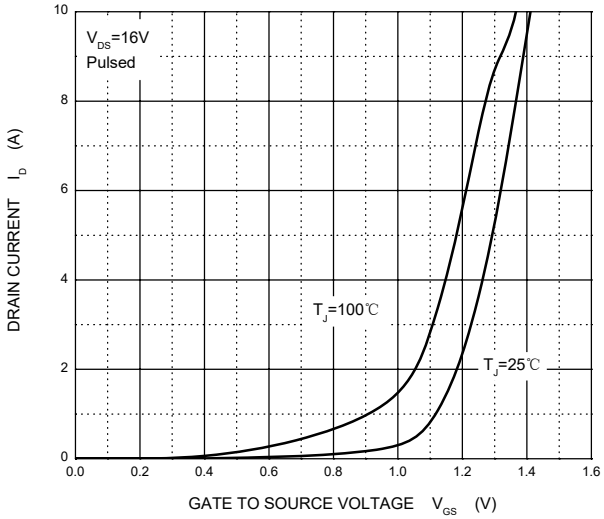
a. Pulse test; pulse width ≤ 300 µs, duty cycle ≤ 2 %.
b. Guaranteed by design, not subject to production testing.
c. Surface Mounted on FR4 Board, t ≤10 sec.
d. Repetitive Rating: Pulse width limited by maximum junction temperature.

Typical Performance Characteristics

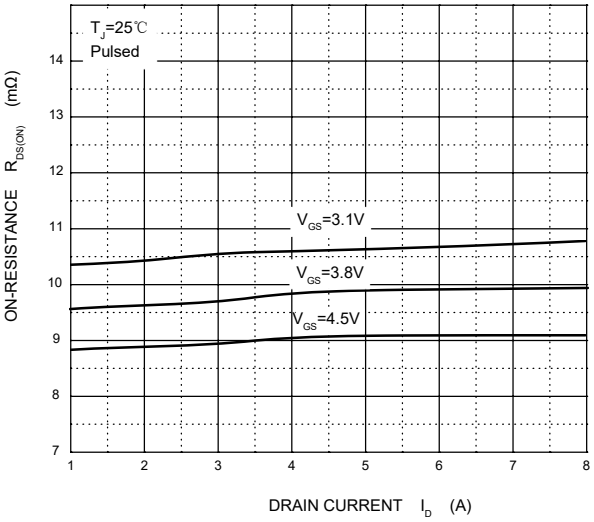
Output Characteristics



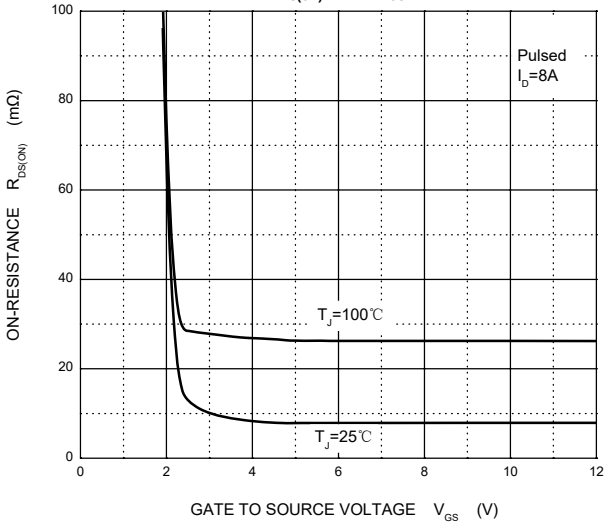
Transfer Characteristics



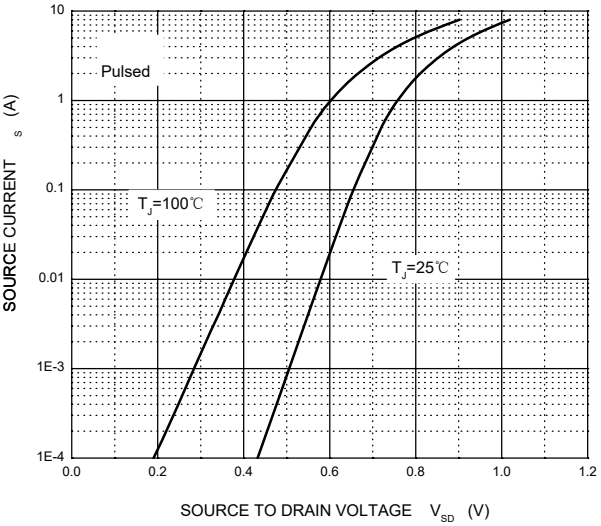
$R_{DS(ON)}$ —— I_D



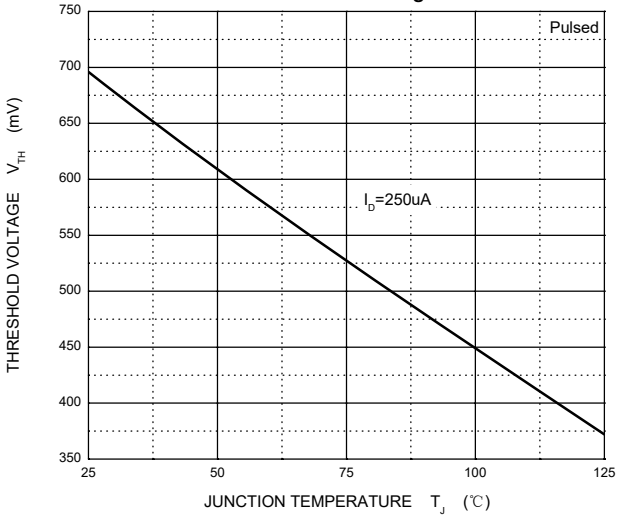
$R_{DS(ON)}$ —— V_{GS}



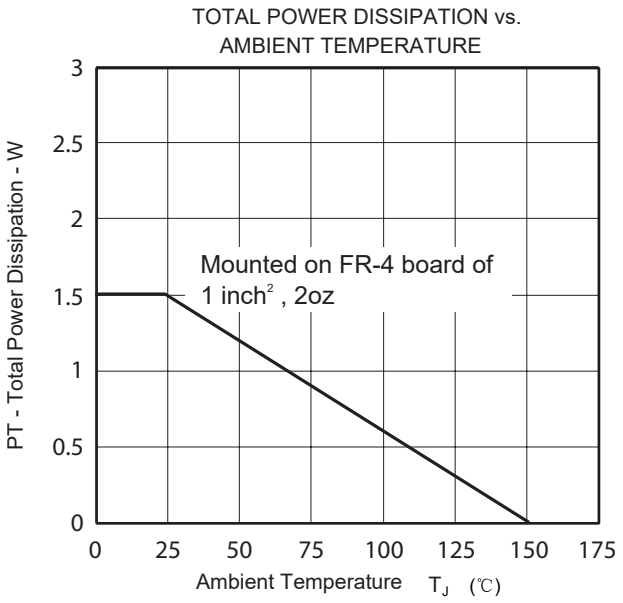
I_S —— V_{SD}

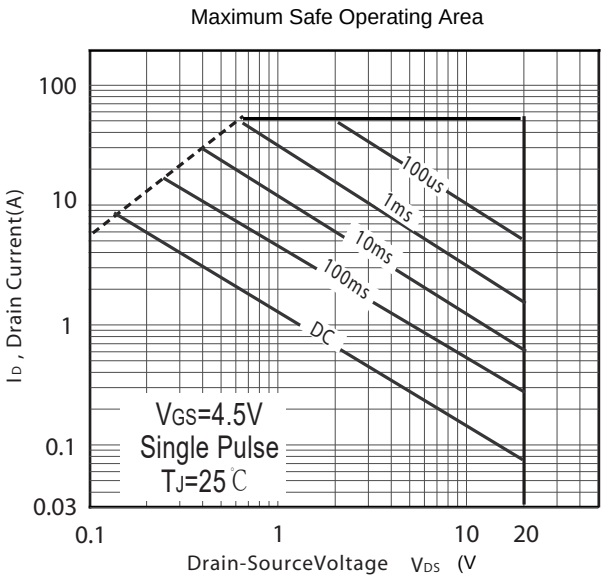


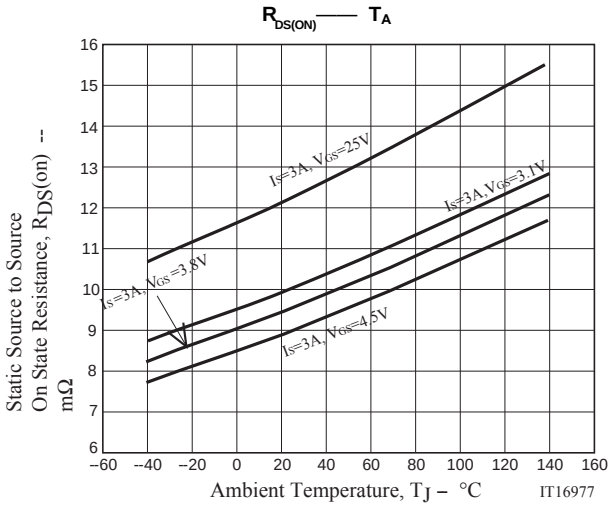
Threshold Voltage



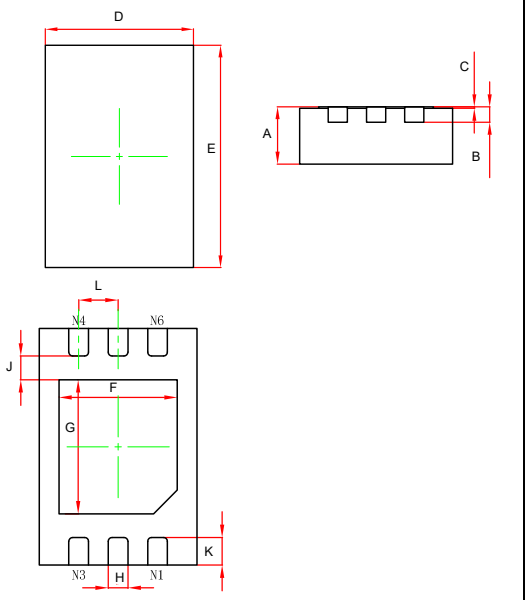
Typical Performance Characteristics







Outline Drawing DFN2030-6L



Dimensions					
DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.028	.032	0.700	0.800	
B	0.008REF.		0.203REF.		
C	0000	0.002	0.000	0.050	
D	0.077	0.081	1.950	2.050	
E	0.116	0.120	2.950	3.050	
F	0.055	0.063	1.400	1.600	
G	0.063	0.071	1.600	1.800	
H	0.008	0.012	0.200	0.300	
J	0.008	---	0.200	---	
K	0.018	0.026	0.300	0.400	
L	0.020TYP.		0.500TYP.		

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