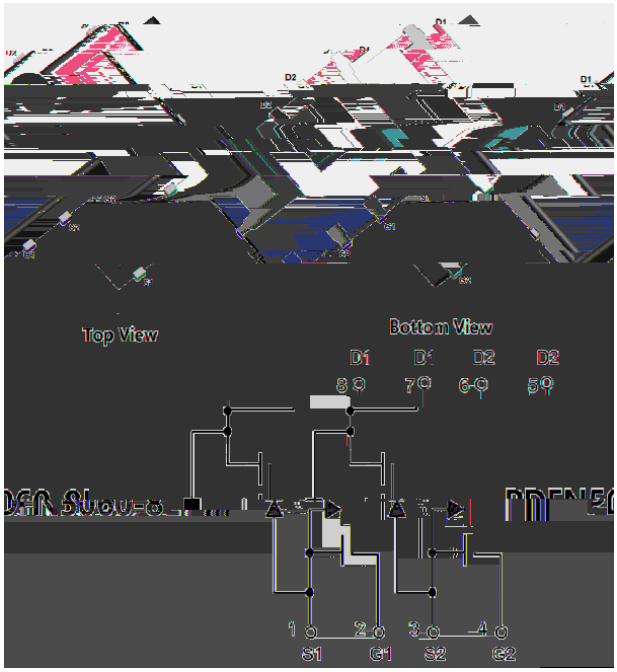
RoHS
COMPLIANT



- $R_{DS(ON)}$(at V_{GS}=4.5V) 22 mohm
- $R_{DS(ON)}$(at V_{GS}=4.5V) 27 mohm

General Description

- Split gate trench MOSFET technology
- High density cell design for low $R_{DS(ON)}$
- High Speed switching
- Moisture Sensitivity Level 1
- Epoxy Meets UL 94 V-0 Flammability Rating
- Halogen Free
- Part no. with suffix “Q” means AEC-Q101 qualified

Applications

- DC-DC Converters
- Power management functions
- Industrial and Motor Drive application
- 12V, 24V and 48V Automotive systems

■ Absolute Maximum Ratings (T_A=25 unless otherwise noted)

Parameter		Symbol	N-Die1/Die2	Unit
Drain-source Voltage		V_{DS}	100	V
Gate-source Voltage		V_{GS}	± 20	V
Drain Current	T_C=25	I_D	20	A
	T_C=100		13	
	T_A=25		7	
	T_A=100		4.5	
Pulsed Drain Current [A]		I_{DM}	80	A
Avalanche energy [B]		E_{AS}	81	mJ
Total Power Dissipation[C]	T_C=25	P_D	50	W
	T_C=100		20	
	T_A=25		2.5	
	T_A=100		1	
Junction and Storage Temperature Range		T_J ,T_{STG}	-55~+150	

■Thermal resistance

Parameter		Symbol	Typ	Max	Units
Thermal Resistance Junction-to-Ambient [D]	Steady-State	$R_{\theta JA}$	40	50	/W
Thermal Resistance Junction-to-Case	Steady-State	$R_{\theta JC}$	2	2.5	

■ Ordering Information (Example)

PREFERED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
YJGD20G10BQ	F1	YJGD20G10B	5000	10000	100000	13“ reel

■ NMOS(Die1/Die2) Electrical Characteristics (T_J=25 unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}= 0V, I_D=250μA	100			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=100V,V_{GS}=0V			1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS}= ± 20V, V_{DS}=0V			± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}= V_{GS}, I_D=250μA	1.0	1.8	2.5	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}= 10V, I_D=20A		16	22	mΩ
		V_{GS}= 4.5V, I_D=10A		18	27	
Diode Forward Voltage	V_{SD}	I_S=20A,V_{GS}=0V		0.9	1.3	V
Gate Resistance	R_g	f=1MHz		1.5		Ω
Dynamic Parameters						
Input Capacitance	C_{iss}	V_{DS}=25V,V_{GS}=0V,f=1MHZ		1240		pF
Output Capacitance	C_{oss}			740		
Reverse Transfer Capacitance	C_{rss}			25		
Switching Parameters						
Total Gate Charge	Q_g	V_{GS}=10V,V_{DS}=50V,I_D=20A		17		nC
Gate-Source Charge	Q_{gs}			6		
Gate-Drain Charge	Q_{gd}			3		
Reverse Recovery Chrage	Q_{rr}	I_F=20A, di/dt=100A/us		42		
Reverse Recovery Time	t_{rr}			40		ns
Turn-on Delay Time	$t_{D(on)}$	V_{GS}=10V,V_{DD}=50V,I_D=20A R_{GEN}=3.0Ω		40		
Turn-on Rise Time	t_r			12		
Turn-off Delay Time	$t_{D(off)}$			55		
Turn-off fall Time	t_f			16		

A. Repetitive rating; pulse width limited by max. junction temperature.
B. V_{DD}=50V, R_G=25Ω, L=2mH, I_{AS}=9A.
C. Pd is based on max. junction temperature, using junction-case thermal resistance.
D. The value of RθJA is measured with the device mounted on 1in2 FR-4 board with 2oz. Copper, in a still air environment with TA =25 ° C. The Power dissipation PDSM is based on RθJA t≤ 10s and the maximum allowed junction temperature of 150 ° C. The value in any given application depends on the user's specific board design.

y NMOS(Die1/Die2) Typical Performance Characteristics

Figure1. Output C

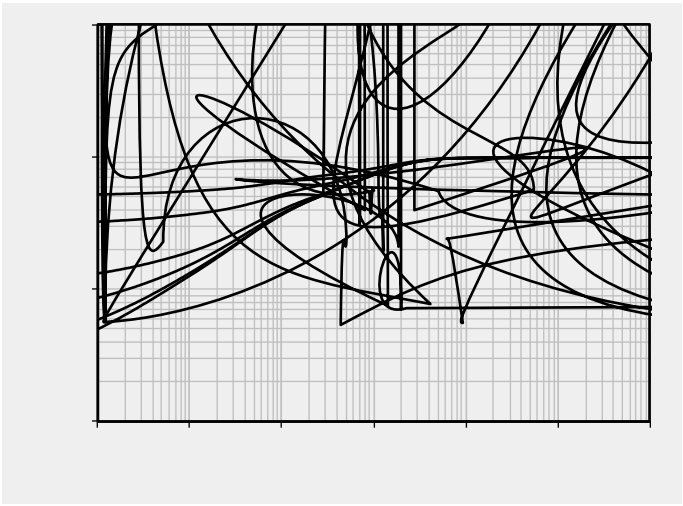


Figure 13. Maximum Transient Thermal Impedance

Figure 14. Safe Operation Area

YJGD20G10BQ

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