



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



YJGD20G10BQ

■ Ordering Information (Example)

PREFERRED 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		ns
Reverse Recovery Time	t _{rr}			40		
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 ≤ 10s and the maximum allowed junction temperature of 150 ° C. The value in any given application depends on the user's specific board design.



Ω NMOS(Die1/Die2) Typical Performance Characteristics

Figure1. Output C

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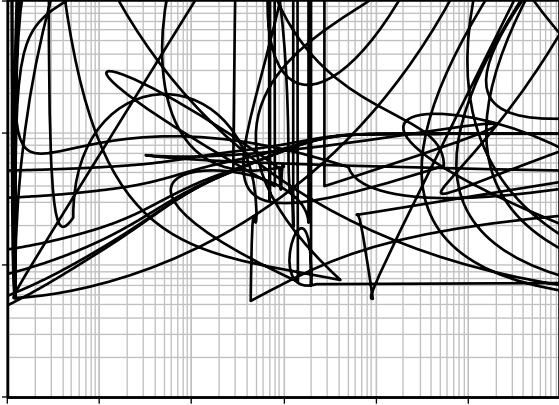


Figure 13. Maximum Transient Thermal Impedance

Figure 14. Safe Operation Area

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