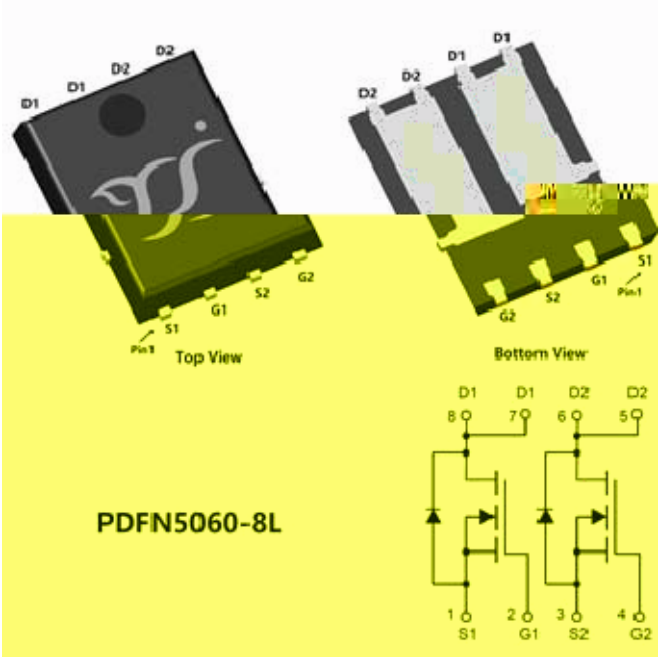
N-Channel Enhancement Mode Field Effect Transistor



Product Summary

- V_{DS} 40V
- I_D 60A
- $R_{DS(ON)}$(at V_{GS}=10V) 6.8mΩ
- 100% EAS Tested
- 100% V_{DS} Tested

General Description

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

Applications

- Power switching application

Parameter			Symbol	Limit	Unit
Drain-source Voltage			V_{DS}	40	V
Gate-source Voltage			V_{GS}	±20	V
Continuous Drain Current (Note 1,2)	Steady-State	T_A=25	I_D	11	A
		T_A=100		8	
Continuous Drain Current (Note 1,3)	Steady-State	T_C=25		60	
		T_C =100		42	
Pulsed Drain Current	T_C=25 , t_p=100μs		I_{DM}	240	A
Avalanche energy	V_G=10V, R_G=25Ω, L=0.5mH, IAS=18A		EAS	81	mJ
Total Power Dissipation (Note 1,2)	Steady-State	T_A=25	P_D	2.5	W
		T_A=100		1.2	
Total Power Dissipation (Note 1,3)	Steady-State	T_C=25		62	
		T_C =100		31	
Junction and Storage Temperature Range			T_J ,T_{STG}	-55 +175	

■Thermal resistance

Parameter		Symbol	Typ	Max	Units
Thermal Resistance Junction-to-Ambient (Note 2)	Steady-State	$R_{\theta JA}$	50	60	/W
Thermal Resistance Junction-to-Case	Steady-State	$R_{\theta JC}$	2	2.4	

■ Ordering Information (Example)

PREFERED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
YJGD60G04HHQ	F1	YJGD60G04H	5000	10000	100000	13" reel

■ 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	40	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=40V, 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	2	3	4	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=20A		5.2	6.8	mΩ
Diode Forward Voltage	V_{SD}	I_S=20A, V_{GS}=0V	-	0.85	1.2	V
Gate resistance	R_G	f=1MHz	-	2.5		Ω
Maximum Body-Diode Continuous Current	I_S		-		60	A
Dynamic Parameters						
Input Capacitance	C_{iss}	V_{DS}=25V, V_{GS}=0V, f=1MHz	-	1100	-	pF
Output Capacitance	C_{oss}		-	385	-	
Reverse Transfer Capacitance	C_{rss}		-	22	-	
Switching Parameters						
Total Gate Charge	Q_g	V_{GS}=10V, V_{DS}=20V, I_D=35A	-	13.8	-	nC
Gate-Source Charge	Q_{gs}		-	8.22	-	
Gate-Drain Charge	Q_{gd}		-	1.8	-	
Reverse Recovery Charge	Q_{rr}	I_F=35A, di/dt=100A/us	-	6.45	-	nC
Reverse Recovery Time	t_{rr}		-	21	-	ns
Turn-on Delay Time	$t_{D(on)}$	V_{GS}=10V, V_{DD}=20V, I_D=35A R_{GEN}=3Ω	-	9.2	-	ns
Turn-on Rise Time	t_r		-	52.5	-	
Turn-off Delay Time	$t_{D(off)}$		-	11.5	-	
Turn-off fall Time	t_f		-	14.3	-	

1. The entire application environment impacts the thermal resistance values shown, they are not constants and are only valid for the particular conditions noted.
2. The value of $R_{\theta JA}$ is measured with the device mounted on the 40mm*40mm*1.1mm single layer FR-4 PCB board with 1 in^2 pad of 2oz. Copper, in the still air environment with TA =25 .The maximum allowed junction temperature of 175 . The value in any given application depends on the user's specific board design. taf " f " w א

■Typical Electrical and Thermal Characteristics Diagrams

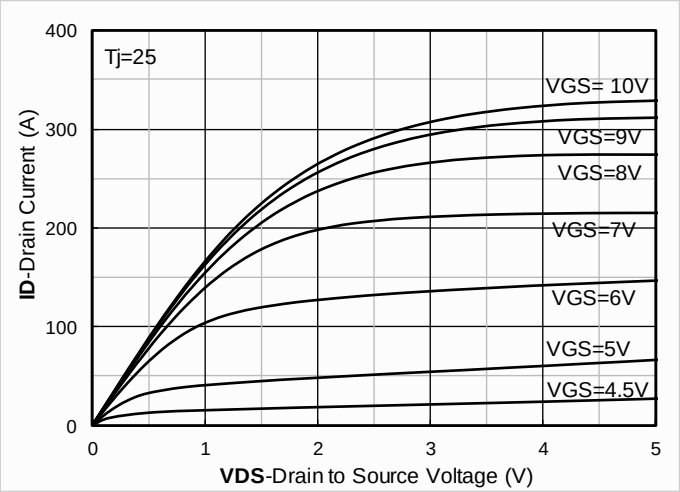


Figure 1. Output Characteristics

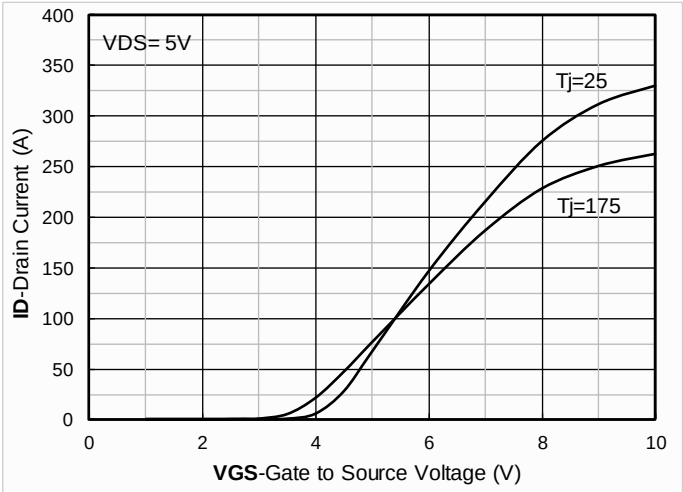


Figure 2. Transfer Characteristics

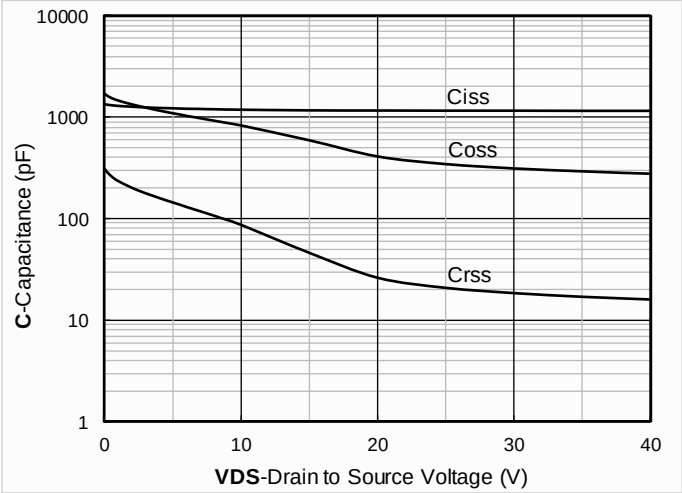


Figure 3. Capacitance Characteristics

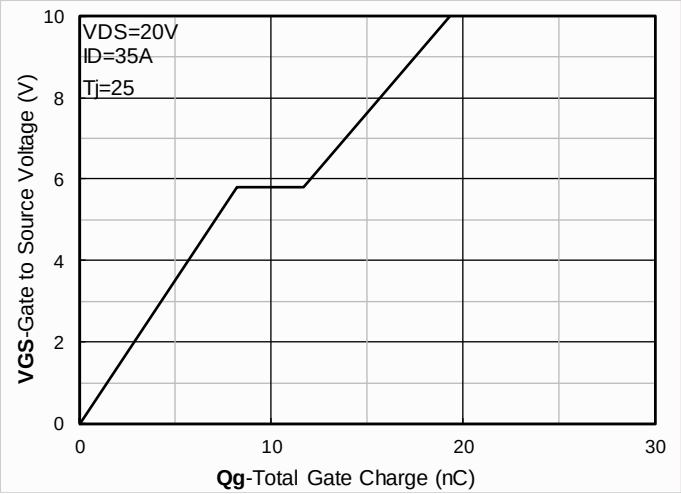


Figure 4. Gate Charge

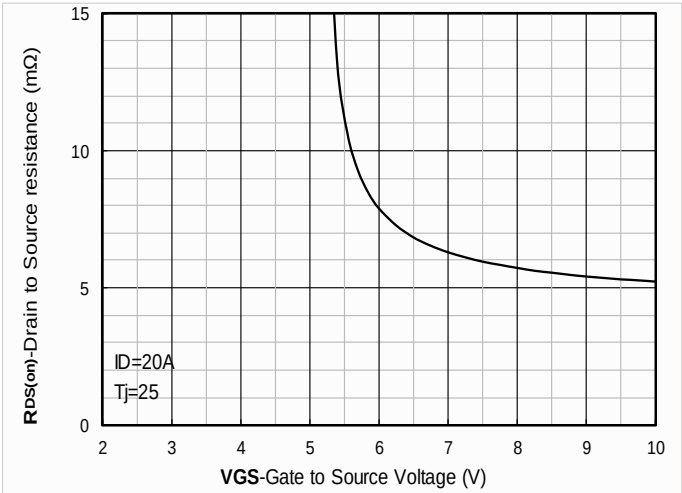


Figure 5. On-Resistance vs Gate to Source Voltage

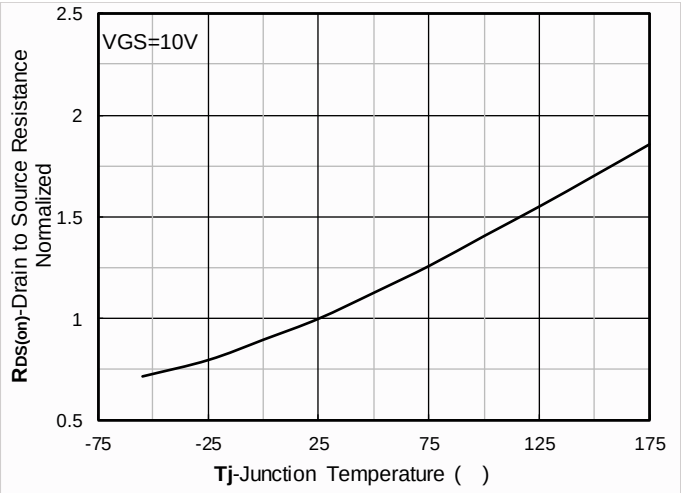


Figure 6. Normalized On-Resistance

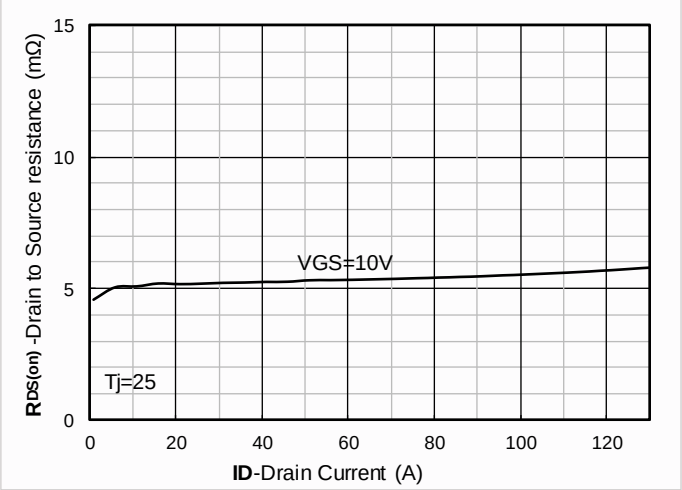


Figure 7. $R_{DS(on)}$ VS Drain Current

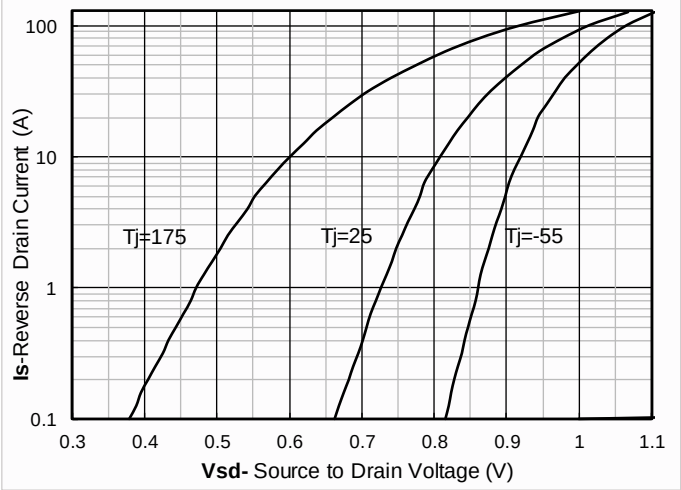
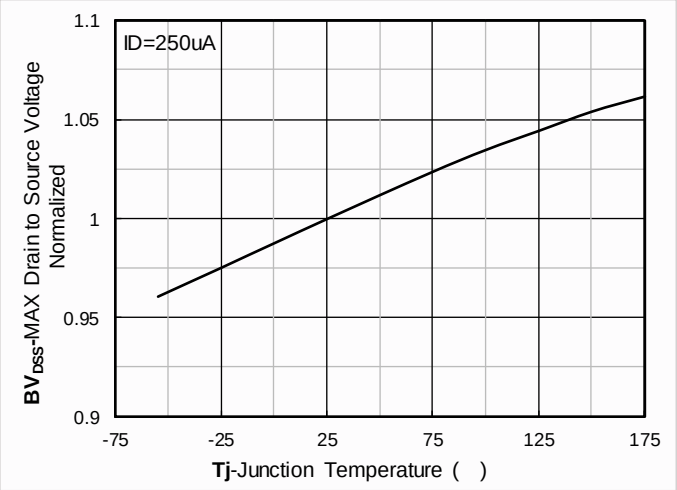
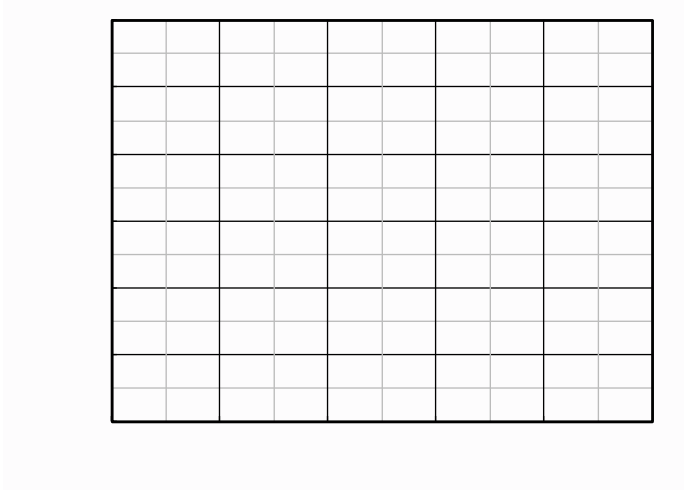
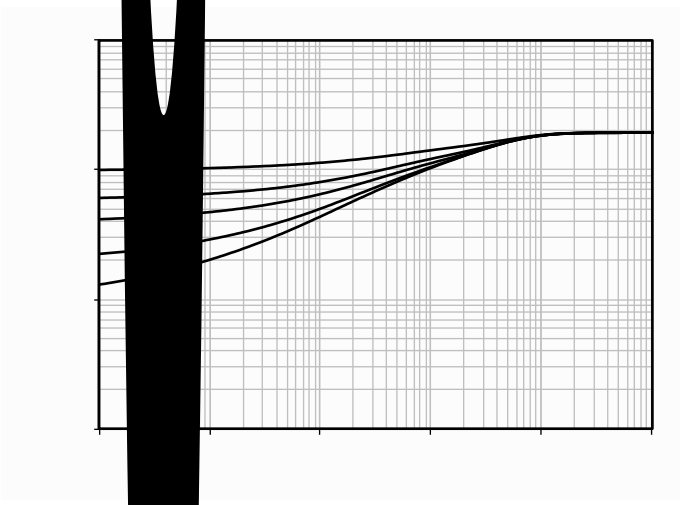


Figure 8. Forward characteristics of reverse diode







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