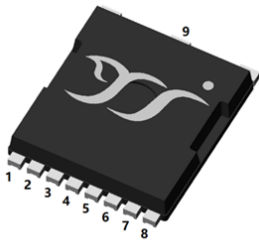
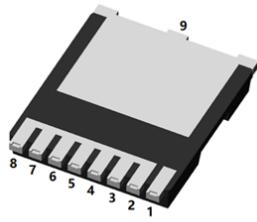


N-Channel Enhancement Mode Field Effect Transistor

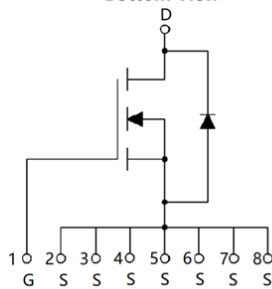


Top View



Bottom View

TOLL



Product Summary

- V_{DS} 40V
- I_D 225A
- $R_{DS(ON)}$ (at $V_{GS}=10V$) $< 1.2m\Omega$
- 100% EAS Tested
- 100% ∇V_{DS} Tested

General Description

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

Applications

- High power inverter system
- Uninterruptible power supply
- LCDM appliances

■ Absolute Maximum Ratings ($T_A=25^\circ C$ unless otherwise noted)

Parameter		Symbol	Limit	Unit
Drain-source Voltage		V_{DS}	40	V
Gate-source Voltage		V_{GS}	± 20	V
Drain Current	$T_A=25^\circ C$	I_D	25	A
	$T_A=100^\circ C$		17.8	
	$T_C=25^\circ C$		225	
	$T_C=100^\circ C$		159	
Pulsed Drain Current ^A		I_{DM}	400	A
Avalanche energy ^B		EAS	1441	mJ
Total Power Dissipation ^C	$T_A=25^\circ C$	P_D	2	W
	$T_A=100^\circ C$		1	
	$T_C=25^\circ C$		166	
	$T_C=100^\circ C$		83	
Junction and Storage Temperature Range		T_J, T_{STG}	-55~+175	$^\circ C$

■ Thermal resistance

Parameter		Symbol	Typ	Max	Units
Thermal Resistance Junction-to-Ambient ^D	Steady-State	$R_{\theta JA}$	60	72	$^\circ C/W$
Thermal Resistance Junction-to-Case	Steady-State	$R_{\theta JC}$	0.75	0.9	

■ Ordering Information (Example)

PREFERRED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
YJT225G04HJQ	F1	YJT225G04HJ	2000	4000	20000	13" reel

■ Electrical Characteristics ($T_J=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	40	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=40V, V_{GS}=0V$	-	-	1	μA
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=1mA$	2	2.5	3	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=75A$	-	0.9	1.2	m Ω
Diode Forward Voltage	V_{SD}	$I_S=20A, V_{GS}=0V$	-	0.75	1.2	V
Gate resistance	R_G	$f=1MHz$	-	3	-	Ω
Maximum Body-Diode Continuous Current	I_S		-	-	225	A
Dynamic Parameters						
Input Capacitance	C_{iss}	$V_{DS}=25V, V_{GS}=0V, f=1MHz$	-	6830	-	pF
Output Capacitance	C_{oss}		-	1970	-	
Reverse Transfer Capacitance	C_{rss}		-	148	-	
Switching Parameters						
Total Gate Charge	Q_g	$V_{GS}=10V, V_{DS}=20V, I_D=50A$	-	84.3	-	nC
Gate-Source Charge	Q_{gs}		-	30	-	
Gate-Drain Charge	Q_{gd}		-	11.46	-	
Reverse Recovery Charge	Q_{rr}	$I_F=50A, di/dt=100A/us$	-	63	-	nC
Reverse Recovery Time	t_{rr}		-	58	-	ns
Turn-on Delay Time	$t_{D(on)}$	$V_{GS}=10V, V_{DD}=20V, I_D=50A$ $R_{GEN}=2.5\Omega$	-	18	-	ns
Turn-on Rise Time	t_r		-	13	-	
Turn-off Delay Time	$t_{D(off)}$		-	58	-	
Turn-off fall Time	t_f		-	28	-	

A. Repetitive rating; pulse width limited by max. junction temperature.

B. $T_J=25^\circ\text{C}$, $V_{DD}=100V$, $V_G=10V$, $L=3mH$, $I_{AS}=31A$.

C. P_d is based on max. junction temperature, using junction-case thermal resistance.

D. The value of $R_{\theta JA}$ is measured with the device mounted on 1 in² FR-4 board with 2oz. Copper, in the still air environment with $T_A=25^\circ\text{C}$. The maximum allowed junction temperature of 175°C . The value in any given application depends on the user's specific board design.



Typical Electrical and Thermal Characteristics Diagrams

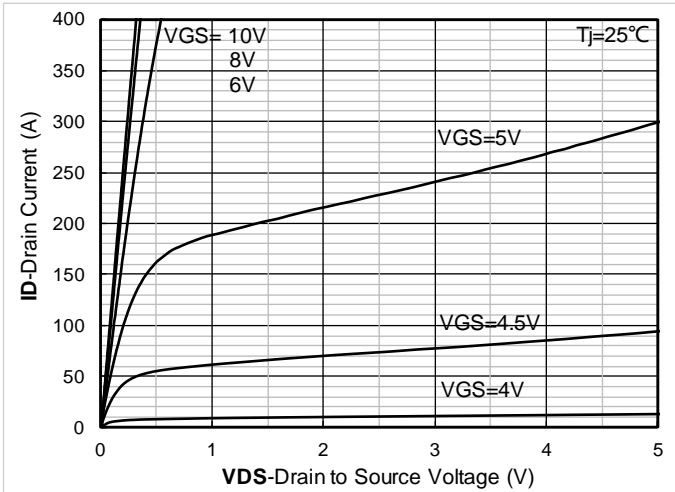


Figure 1. Output Characteristics

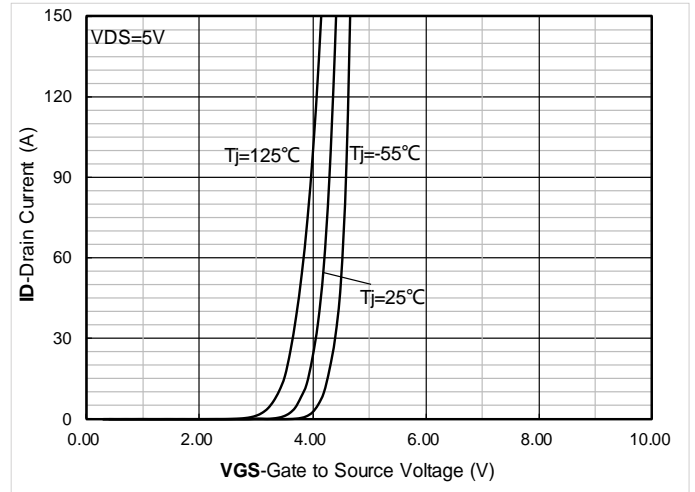


Figure 2. Transfer Characteristics

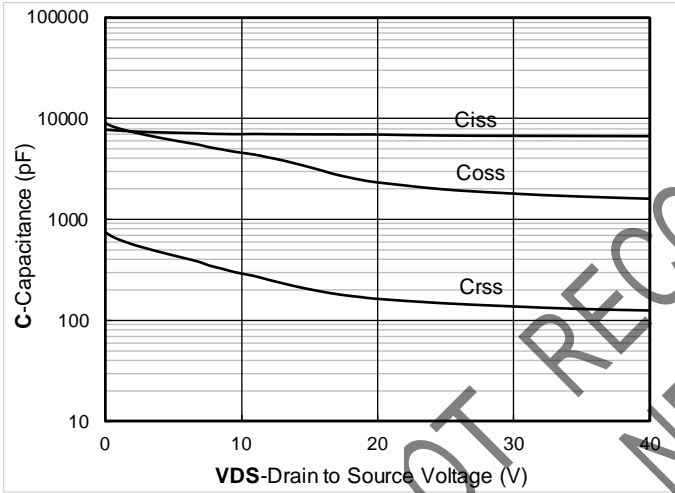


Figure 3. Capacitance Characteristics

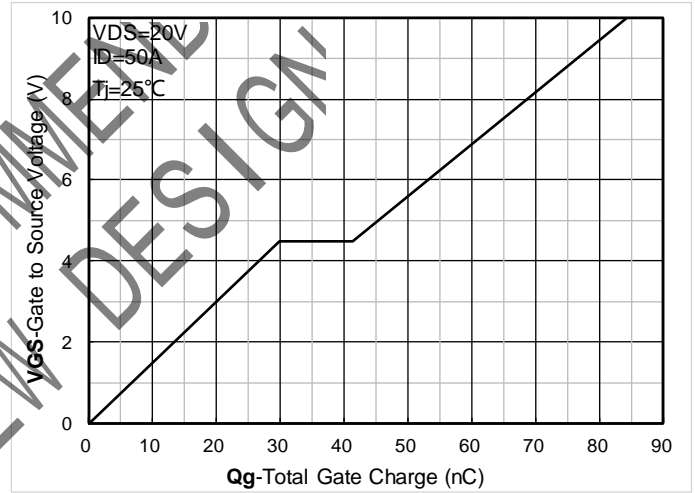


Figure 4. Gate Charge

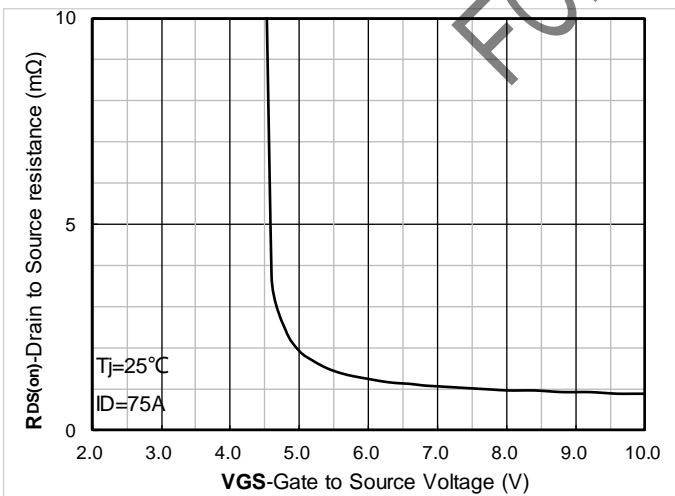


Figure 5. On-Resistance vs Gate to Source Voltage

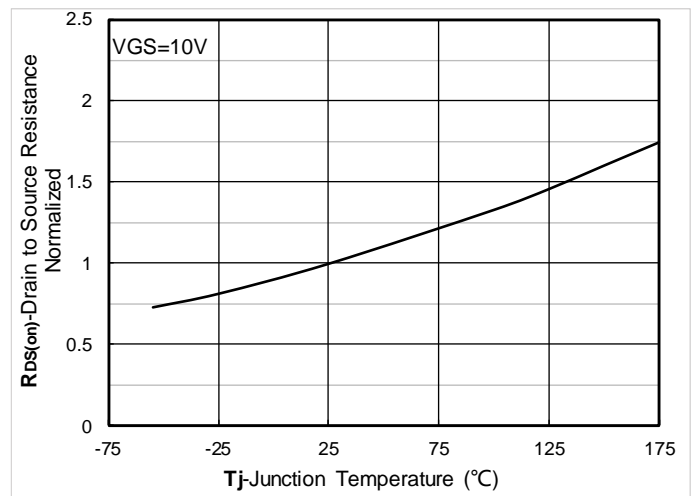


Figure 6. Normalized On-Resistance

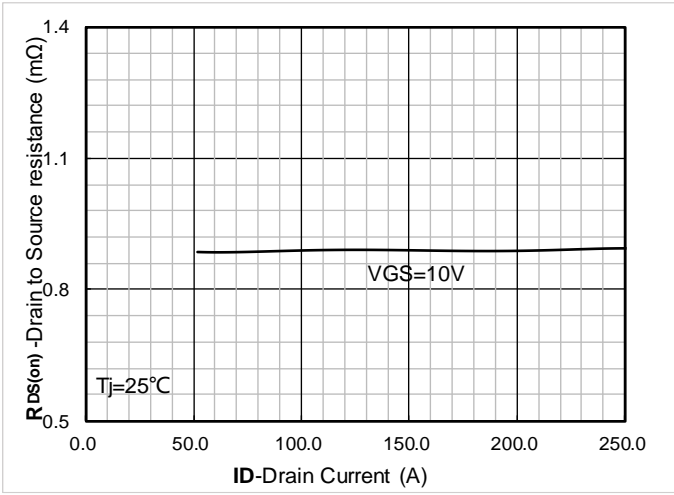


Figure 7. RDS(on) VS Drain Current

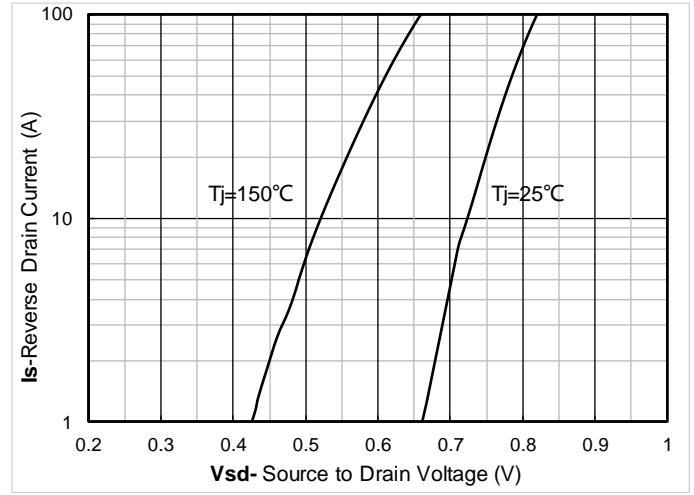


Figure 8. Forward characteristics of reverse diode

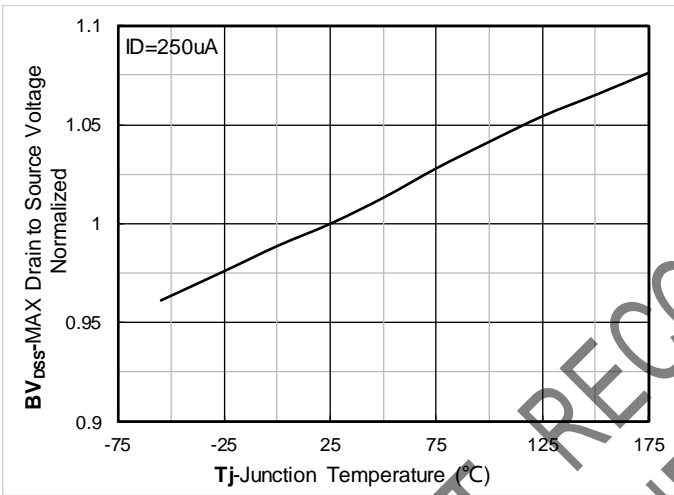


Figure 9. Normalized breakdown voltage

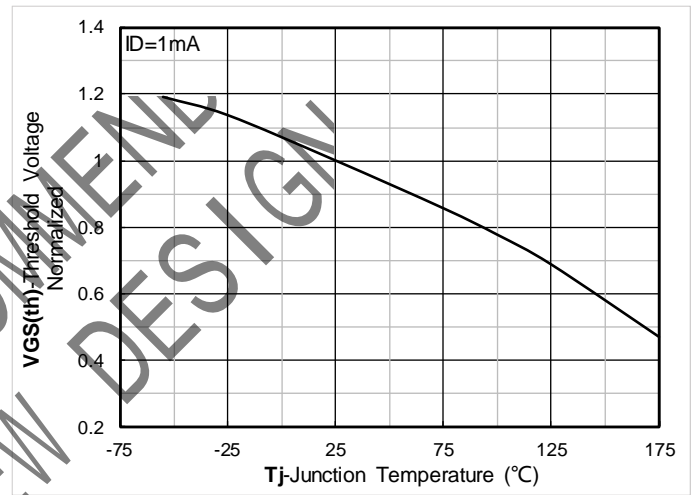


Figure 10. Normalized Threshold voltage

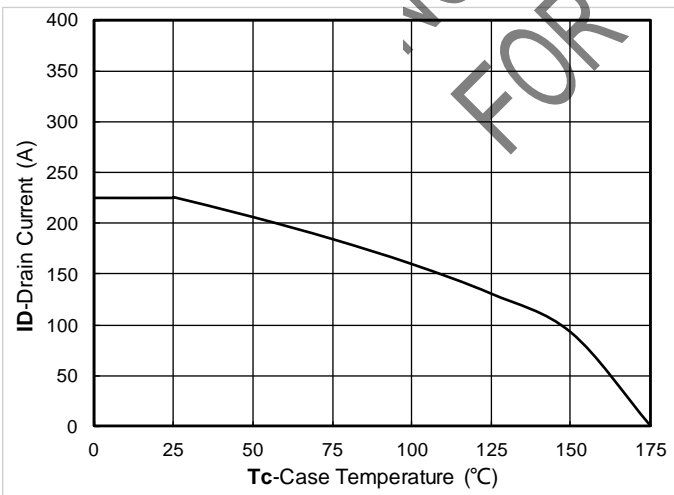


Figure 11. Current dissipation

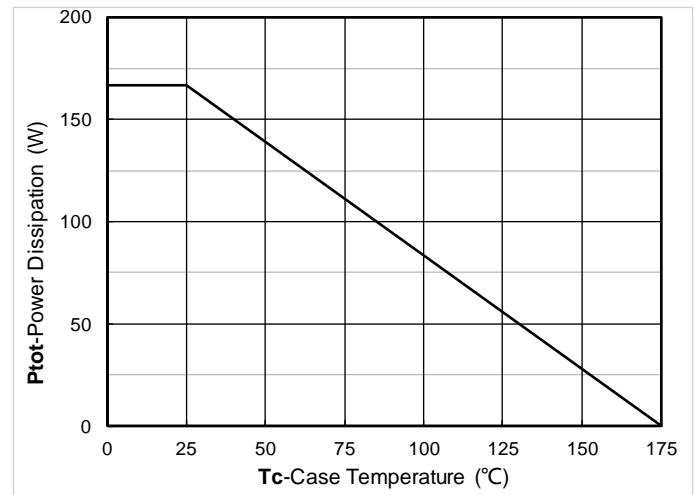


Figure 12. Power dissipation

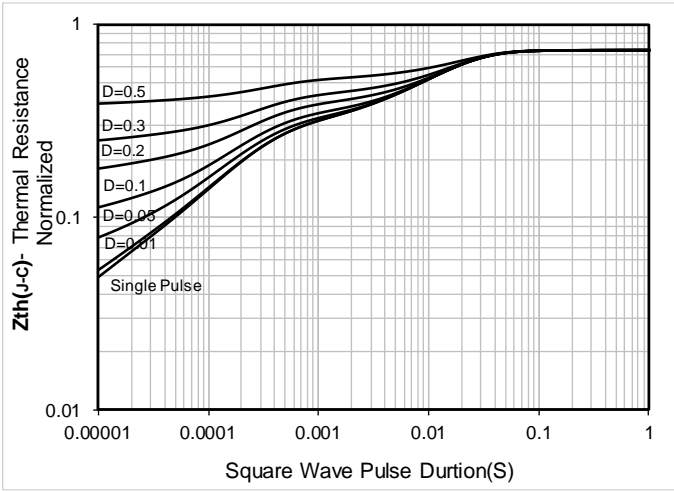


Figure 13. Maximum Transient Thermal Impedance

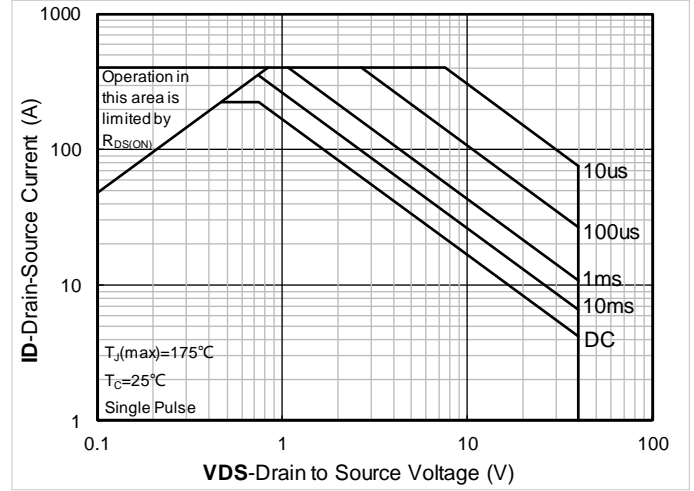
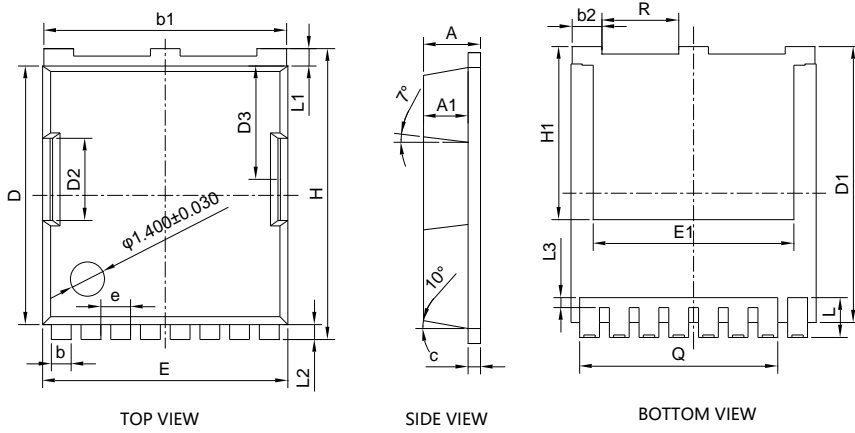


Figure 14. Safe Operation Area

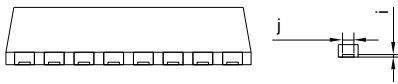
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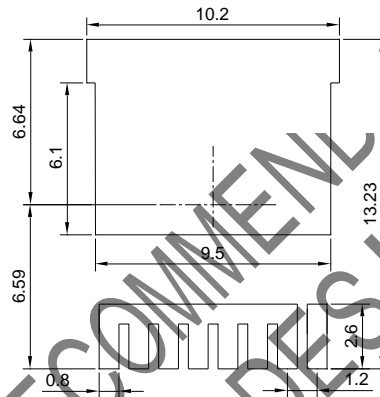
■ TOLL Package information



SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	2.2	2.3	2.4
A1	1.7	1.8	1.9
b	0.7	0.8	0.9
b1	9.7	9.8	9.9
b2	1.1	1.2	1.3
c	0.4	0.5	0.6
D	10.28	10.38	10.48
D1	10.98	11.08	11.18
D2	3.2	3.3	3.4
D3	4.45	4.55	4.65
E	9.8	9.9	10
E1	8	8.1	8.2
e	1.2 BSC		
H	11.58	11.68	11.78
H1	6.95 BSC		
i	0.1 REF		
j	0.46 REF		
L	1.5	1.6	1.7
L1	0.6	0.7	0.8
L2	0.5	0.6	0.7
L3	0.3	0.4	0.5
Q	8 REF		
R	3.0	3.1	3.2



- Note:
1. Controlling dimension: in millimeters.
 2. General tolerance: $\pm 0.03\text{mm}$.
 3. The pad layout is for reference purposes only.



SUGGESTED SOLDER PAD LAYOUT

UNIT: mm

NOT RECOMMEND FOR NEW DESIGN



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