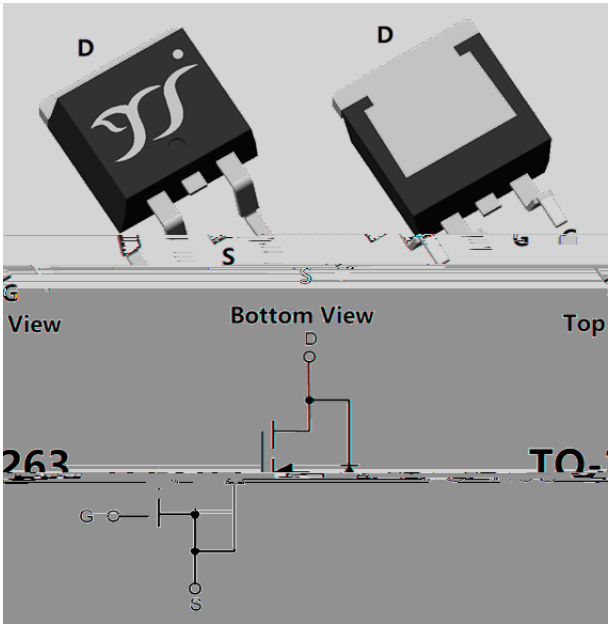
N-Channel Enhancement Mode Field Effect Transistor



Product Summary

- V_{DS} 40V
- I_D 155A
- $R_{DS(ON)}$(at V_{GS}=10V) 2.5mohm
- 100% EAS Tested
- 100% VDS Tested

General Description

- 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
- Uninterruptible power supply
- DC-DC convertor
- 12V Automotive systems

■ Absolute Maximum Ratings (T_A=25 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	I_D	28	A
	T_A=100		20	
	T_C=25		155	
	T_C =100		109	
Pulsed Drain Current [A]		I_{DM}	465	A
Avalanche energy [B]		EAS	937	mJ
Total Power Dissipation [C]	T_A=25	P_D	5	W
	T_A=100		2.5	
	T_C=25		150	
	T_C =100		75	
Junction and Storage Temperature Range		T_J ,T_{STG}	-55 +175	

■Thermal resistance

Parameter		Symbol	Typ	Max	Units
Thermal Resistance Junction-to-Ambient [D]	Steady-State	$R_{\theta JA}$	25	30	/W
Thermal Resistance Junction-to-Case	Steady-State	$R_{\theta JC}$	0.8	1	

■ Ordering Information (Example)

PREFERED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
YJB155G04HHQ	F2	YJB155G04H	800	/	8000	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		1.9	2.5	mΩ
Diode Forward Voltage	V_{SD}	I_S=20A, V_{GS}=0V		0.8	1.2	V
Gate resistance	R_G	f=1MHz		1.0		Ω
Dynamic Parameters						
Input Capacitance	C_{iss}	V_{DS}=25V, V_{GS}=0V, f=1MHz	-	4650	-	pF
Output Capacitance	C_{oss}		-	1280	-	
Reverse Transfer Capacitance	C_{rss}		-	25	-	
Switching Parameters						
Total Gate Charge	Q_g	V_{GS}=10V, V_{DS}=20V, I_D=55A	-	56.56	-	nC
Gate-Source Charge	Q_{gs}		-	27	-	
Gate-Drain Charge	Q_{gd}		-	5.66	-	
Reverse Recovery Charge	Q_{rr}	I_F=55A, di/dt=100A/us	-	52.58	-	nC
Reverse Recovery Time	t_{rr}		-	58.2	-	ns
Turn-on Delay Time	$t_{D(on)}$	V_{GS}=10V, V_{DD}=20V, I_D=55A R_{GEN}=3Ω	-	21.8	-	ns
Turn-on Rise Time	t_r		-	8.6	-	
Turn-off Delay Time	$t_{D(off)}$		-	43.8	-	
Turn-off fall Time	t_f		-	51.7	-	

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

B. T_J=25 , V_{DD}=45V, V_G=10V, R_G=25Ω, L=3mH, IAS=25A.

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 1in2 FR-4 board with 2oz. Copper, in a still air environment with T_A =25

■Typical Electrical and Thermal Characteristics Diagrams

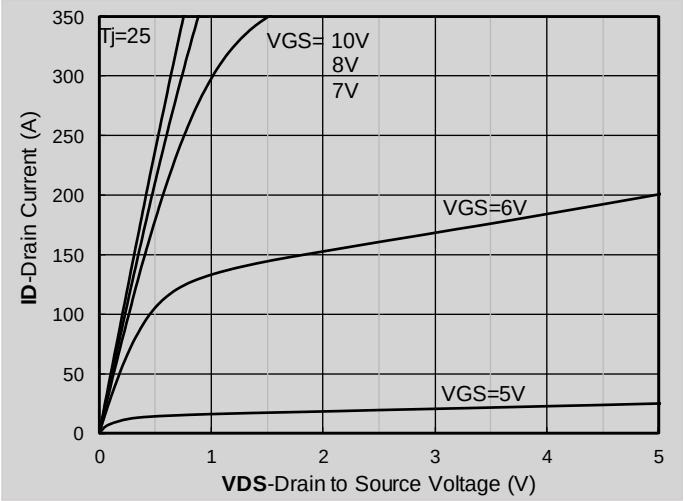


Figure1. Output Characteristics

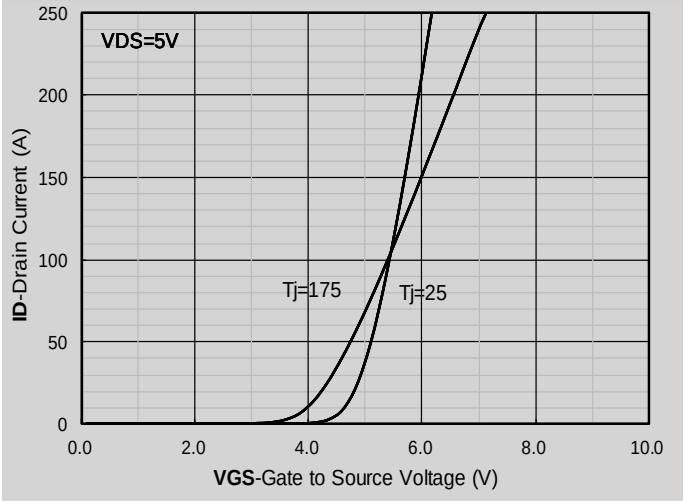


Figure2. Transfer Characteristics

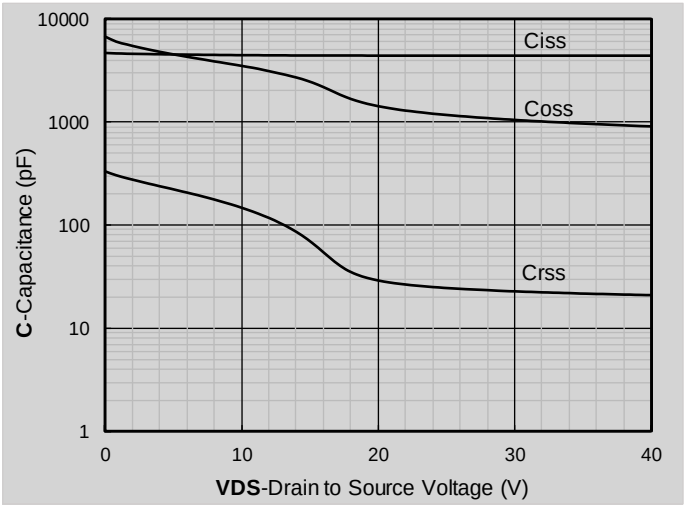


Figure3. Capacitance Characteristics

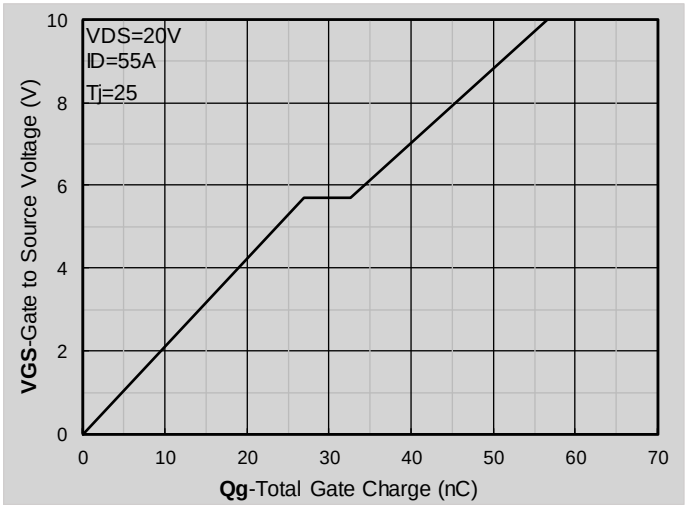


Figure4. Gate Charge

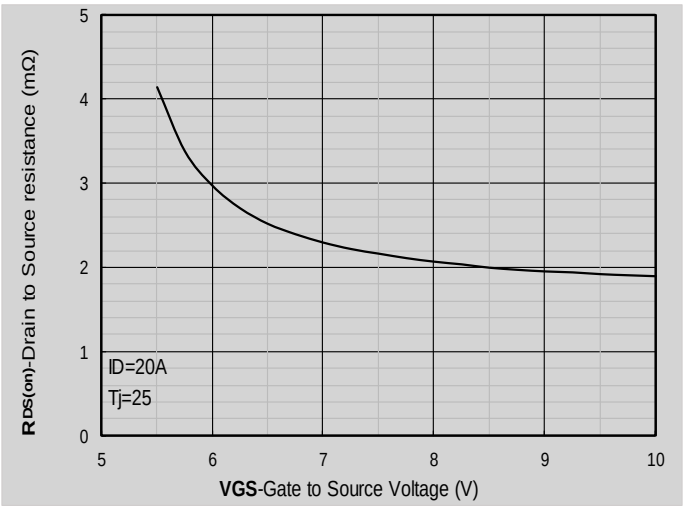


Figure5. On-Resistance vs Gate to Source Voltage

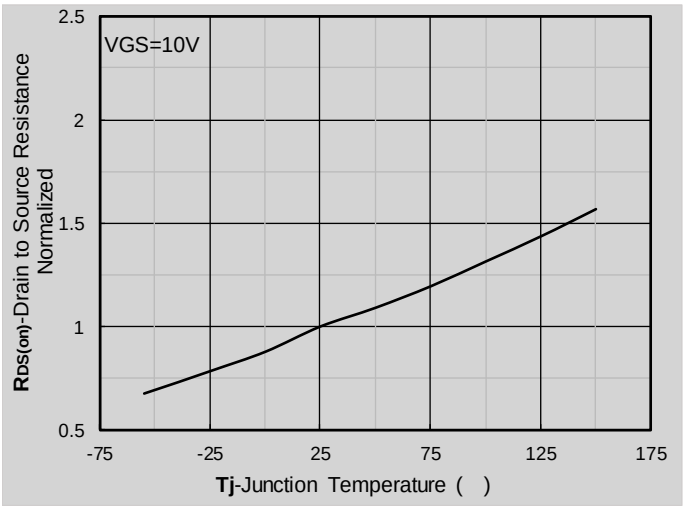


Figure6. Normalized On-Resistance

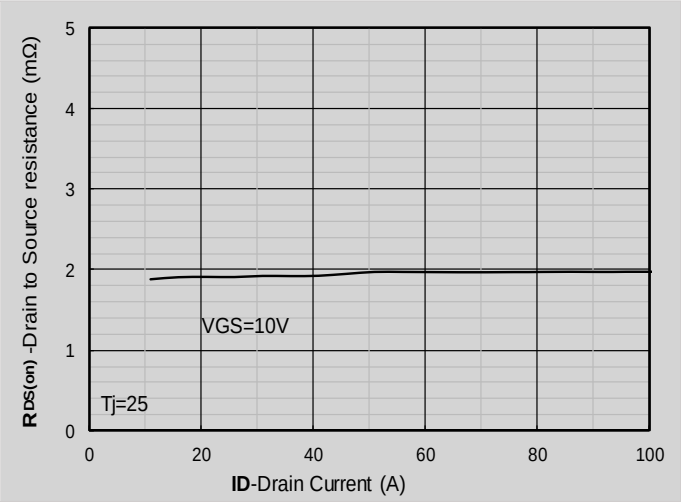


Figure7. $R_{DS(on)}$ VS Drain Current

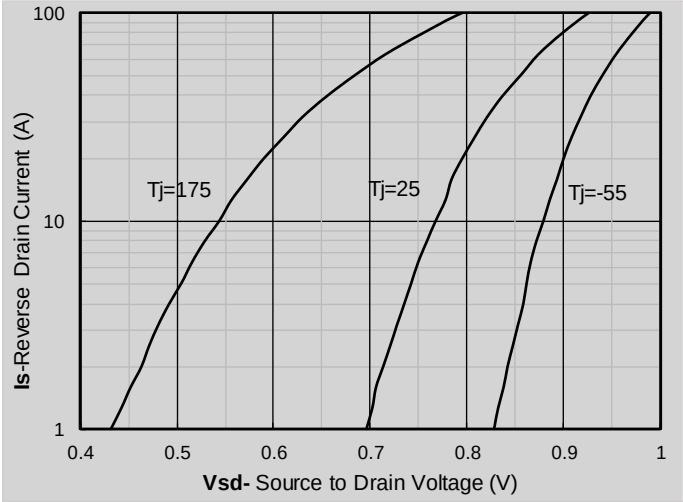


Figure8. Forward characteristics of reverse diode

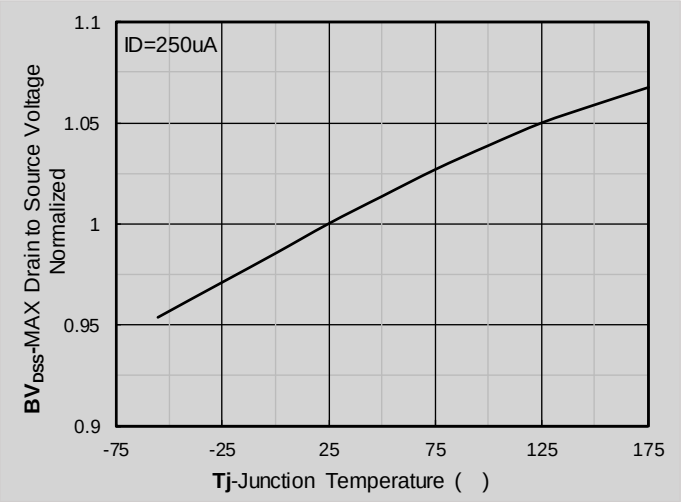


Figure9. Normalized breakdown voltage

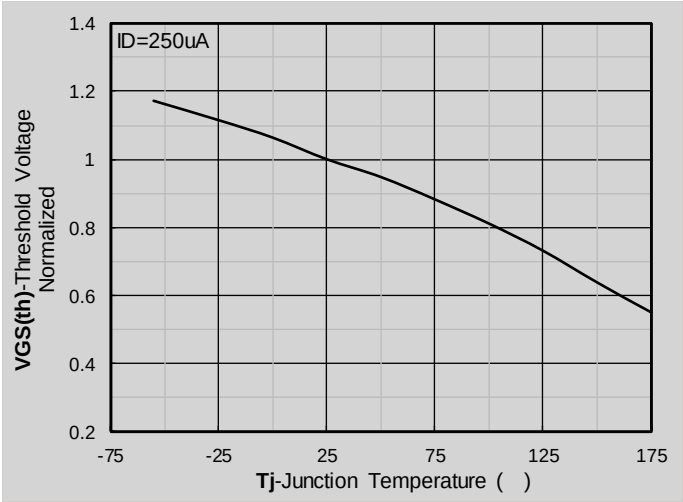


Figure10. Normalized Threshold voltage

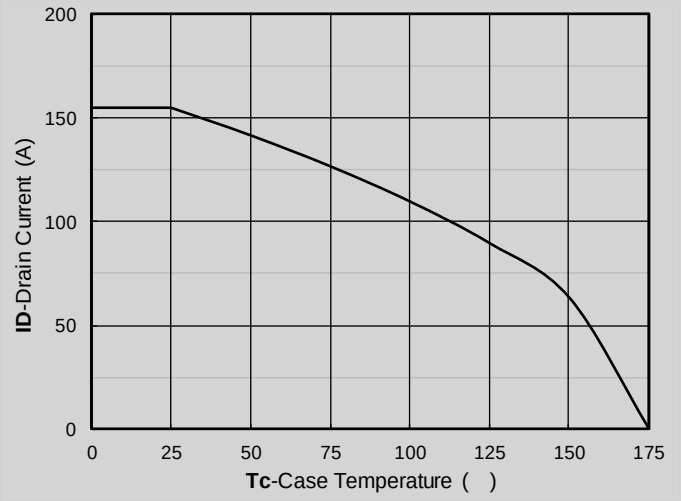


Figure11. Current dissipation

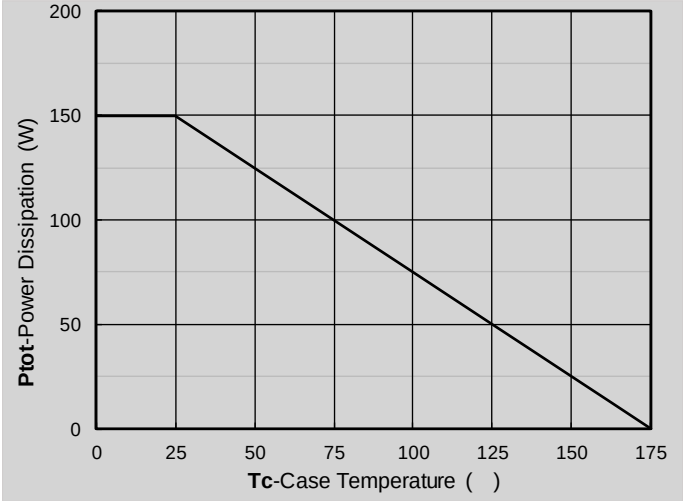
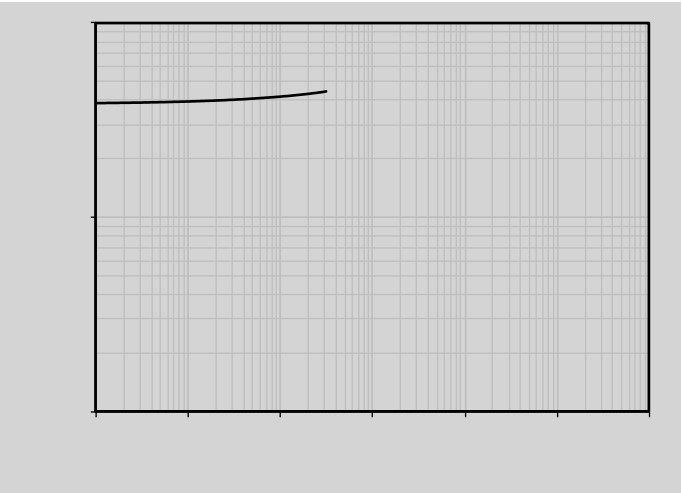
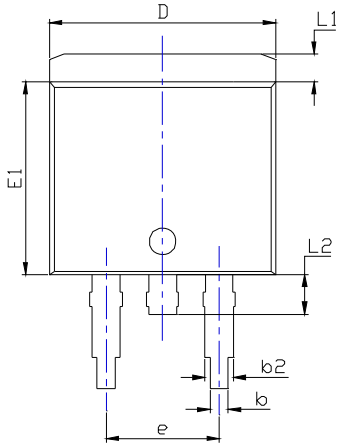


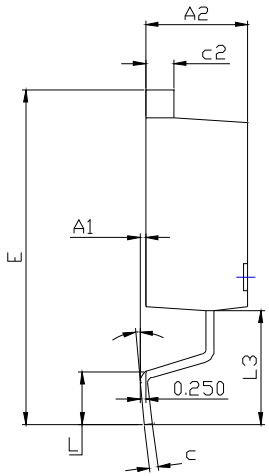
Figure12. Power dissipation



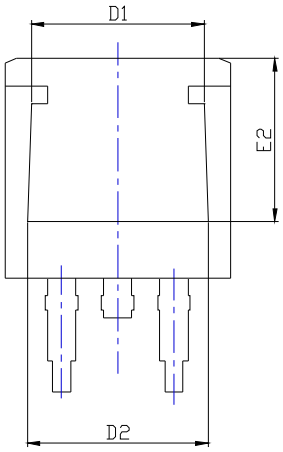
■ TO-263-HY Package information



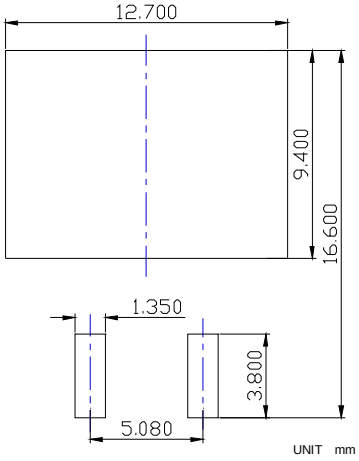
TOP VIEW



SIDE VIEW



BOTTOM VIEW



SUGGESTED SOLDER PAD LAYOUT

DIMENSIONS						
SYMBOL	INCHES			Millimeter		
	MIN.	NOM.	MAX.	MIN.	NOM.	MAX.
A1	0.000	---	0.010	0.000	---	0.250
A2	0.174	0.180	0.186	4.430	4.580	4.730
b	0.028	0.032	0.036	0.720	0.820	0.920
b2	0.046	0.050	0.054	1.180	1.280	1.380
c	0.013	0.015	0.018	0.330	0.390	0.450
c2	0.048	0.050	0.053	1.220	1.280	1.340
D	0.394	0.400	0.406	10.000	10.150	10.300
D1	0.295	0.307	0.319	7.500	7.800	8.100
D2	0.303	0.315	0.327	7.700	8.000	8.300
E	0.571	0.591	0.610	14.500	15.000	15.500
E1	0.337	0.341	0.348	8.550	8.700	8.850
E2	0.276	0.287	0.299	7.000	7.300	7.600
e	0.200BSC			5.080BSC		
L	0.070	---	0.110	1.790	---	2.790
L1	0.044	---	0.056	1.120	---	1.420
L2	0.030	---	0.070	0.770	---	1.770
L3	0.197REF			5.000REF		
	0°	---	8°	0°	---	8°

NOTE:
1.PACKAGE BODY SIZES EXCLUDE MOLD FLASH AND GATE BURRS.
2.TOLERANCE 0.1mm UNLESS OTHERWISE SPECIFIED.
3.THE PAD LAYOUT IS FOR REFERENCE PURPOSES ONLY.

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