N-Channel Enhancement Mode Field Effect Transistor

Product Summary

V_{DS}	100V
I_D	180A
$R_{DS(ON)}$(at V_{GS}=10V)	4.3m
100% EAS Tested	
100%	

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	100	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=100V, V_{GS}=0V	-	-	1	
		V_{DS}=100V, V_{GS}=0V, Tj=150℃	-	-	100	
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	2	3	4	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=90A	-	3.3	4.3	
		V_{GS}=10V, I_D=20A		3.3	4.3	
Diode Forward Voltage	V_{SD}	I_S=90A, V_{GS}=0V	-	1	1.2	V
Gate resistance	R_G	f=1MHz, Open drain	-	1.3	-	
Maximum Body-Diode Continuous Current	I_S		-	-	180	A
Dynamic Parameters						
Input Capacitance	C_{iss}	V_{DS}=50V, V_{GS}=0V, f=1MHz	-	9100	-	pF
Output Capacitance	C_{oss}		-	1200	-	
Reverse Transfer Capacitance	C_{rss}		-	400	-	
Switching Parameters						
Total Gate Charge	Q_g	V_{GS}=10V, V_{DS}=50V, I_D=90A	-	138	-	nC
Gate-Source Charge	Q_{gs}		-	47	-	
Gate-Drain Charge	Q_{gd}		-	32	-	
Reverse Recovery Charge	Q_{rr}	I_F=90A, di/dt=100A/us	-	226	-	nC
Reverse Recovery Time	t_{rr}		-	82	-	ns
Turn-on Delay Time	$t_{D(on)}$	V_{GS}=10V, V_{DD}=50V, I_D=90A R_{GEN}=2.2	-	29	-	ns
Turn-on Rise Time	t_r		-	60	-	
Turn-off Delay Time	$t_{D(off)}$		-	45	-	
Turn-off fall Time	t_f		-	17	-	

A. Repetitive rating; pulse width limited by max. junction temperature.
B. T_J=25℃, V_{DD}=100V, V_G=10V, R_G 5mH, IAS=24.5A.
C. P_d is based on max. junction temperature, using junction-case thermal resistance.
D. The value of R is measured with the device mounted on 1 in^2 FR-4 board with 2oz. Copper, in the still air environment with T_A =25℃. The maximum allowed junction temperature of 150℃. The value in any given application depends on the user's specific board design.

Typical Electrical and Thermal Characteristics Diagrams

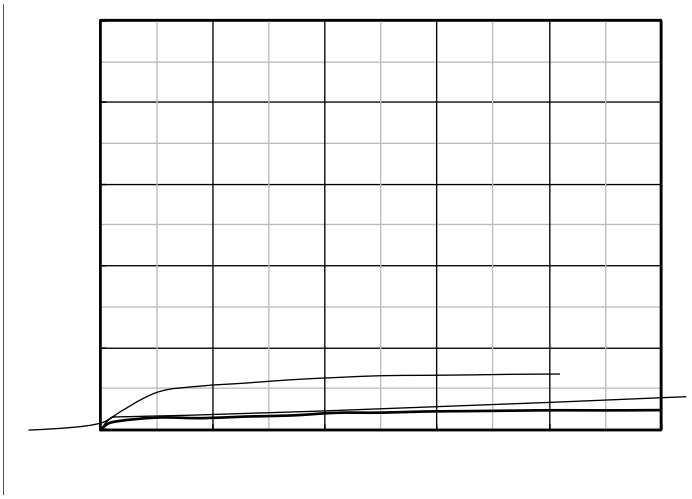


Figure 1. Output Characteristics

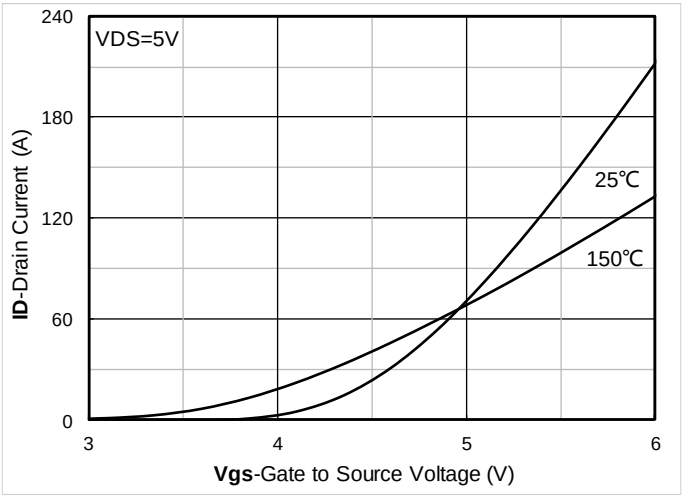


Figure 2. Transfer Characteristics

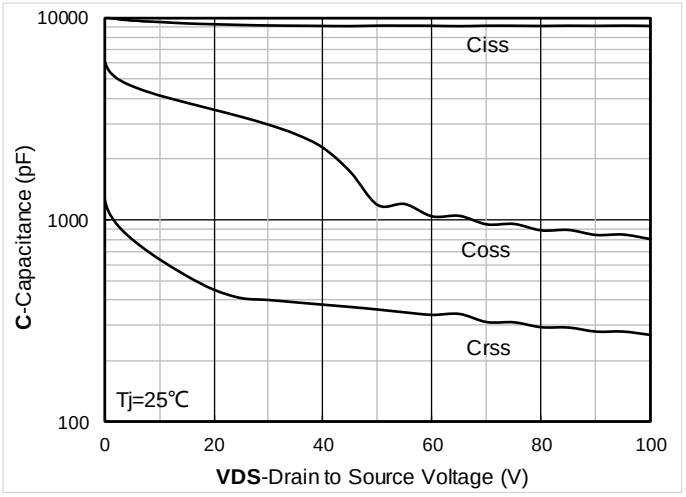


Figure 3. Capacitance Characteristics

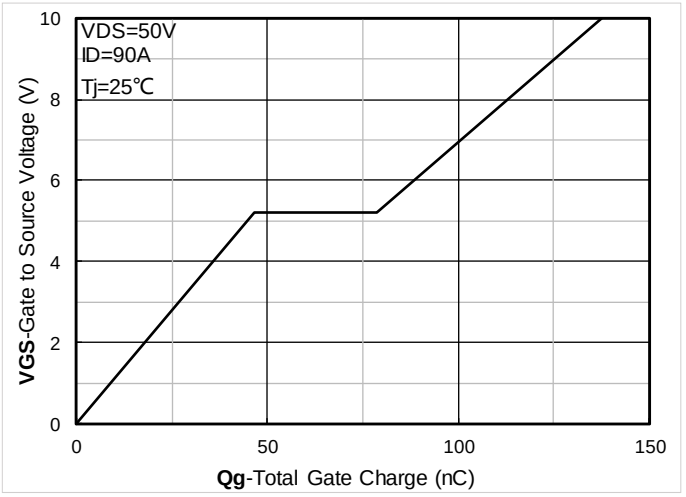


Figure 4. Gate Charge

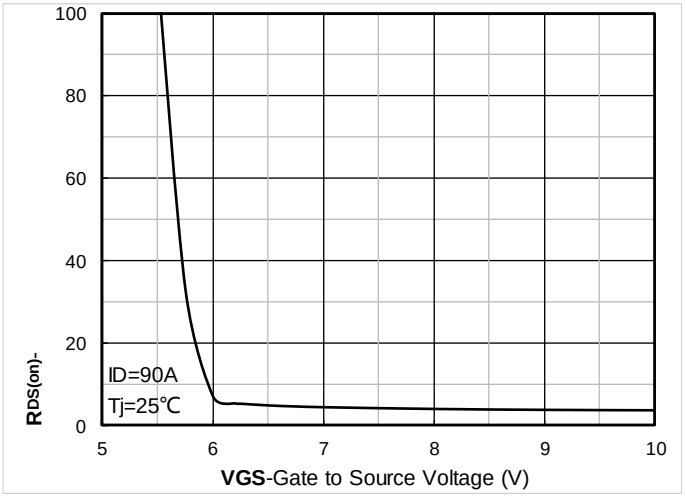


Figure 5. On-Resistance vs Gate to Source Voltage

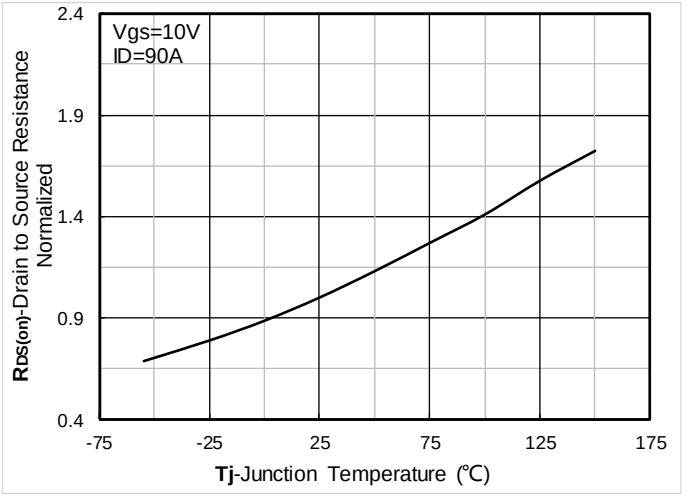


Figure 6. Normalized On-Resistance

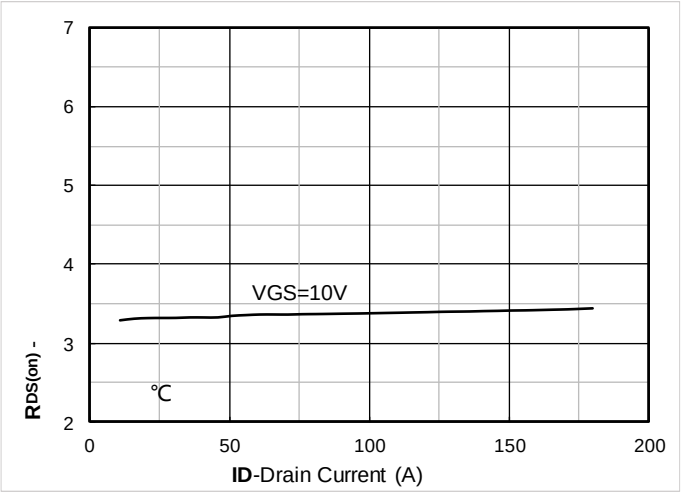


Figure 7. RDS(on) VS Drain Current

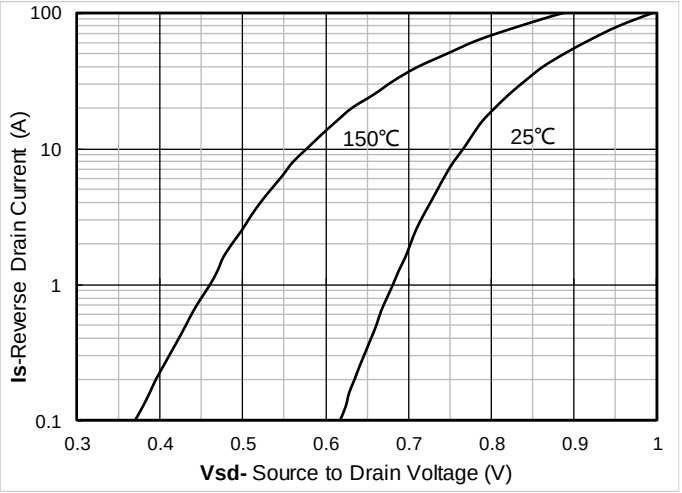


Figure 8. Forward characteristics of reverse diode

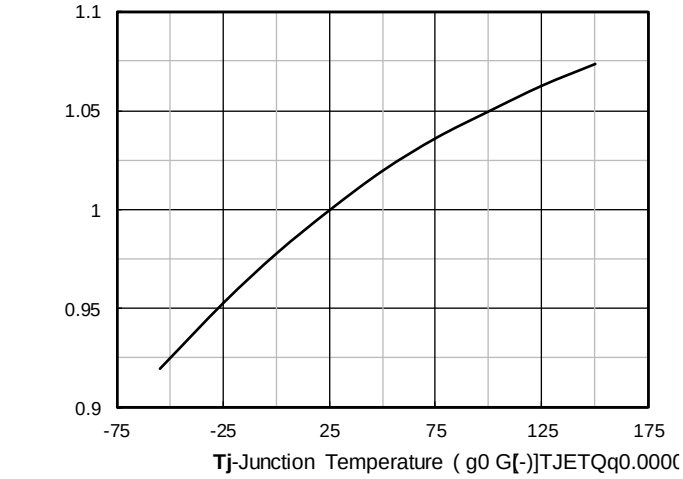


Figure 9. Normalized breakdown voltage

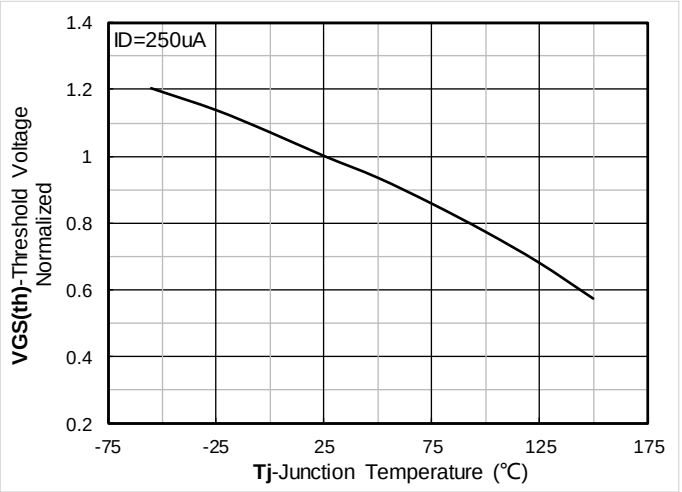


Figure 10. Normalized Threshold voltage

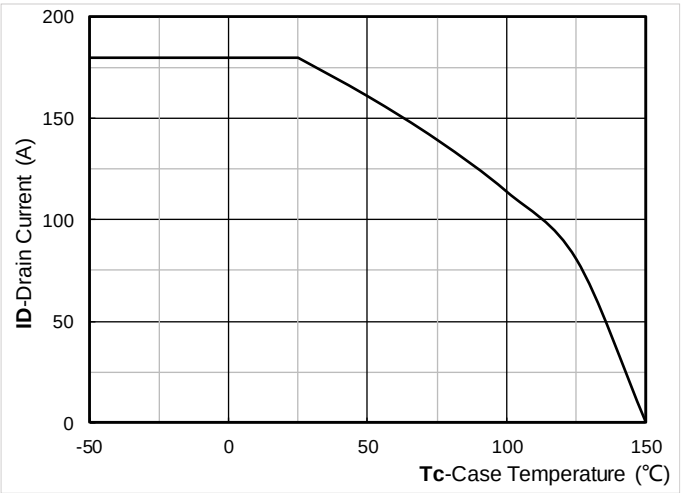


Figure 11. Current dissipation

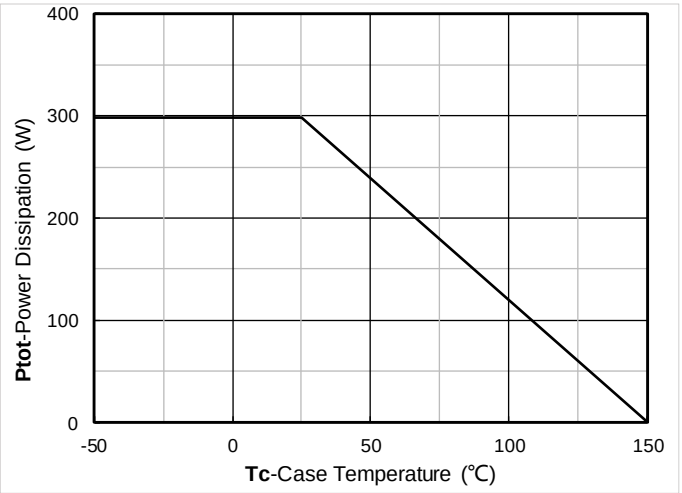


Figure 12. Power dissipation

YJN180G10HJ

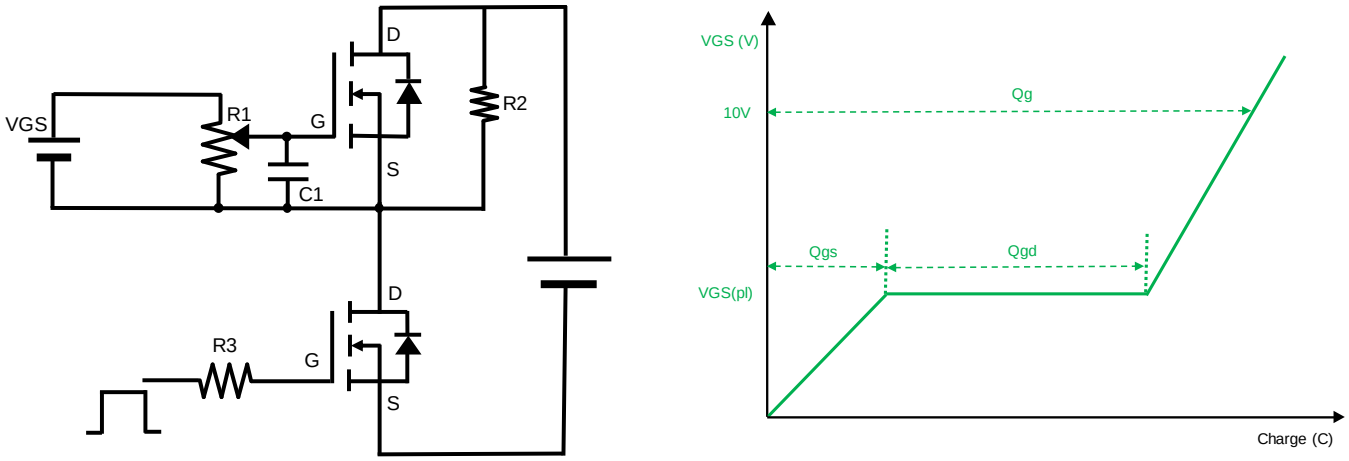


Figure B. Gate Charge Test Circuit & Waveform

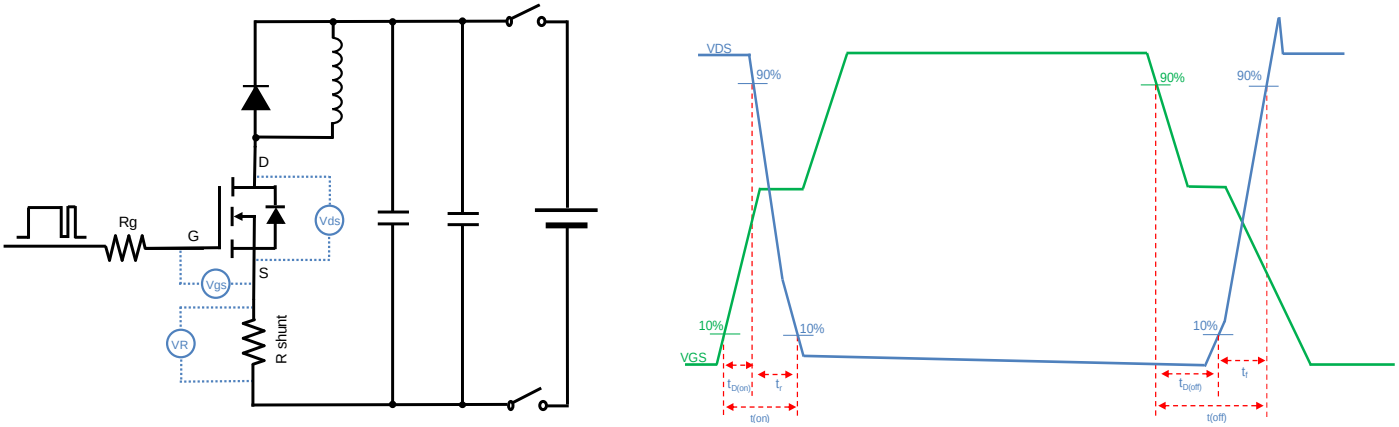


Figure C. Resistive Switching Test Circuit & Waveform

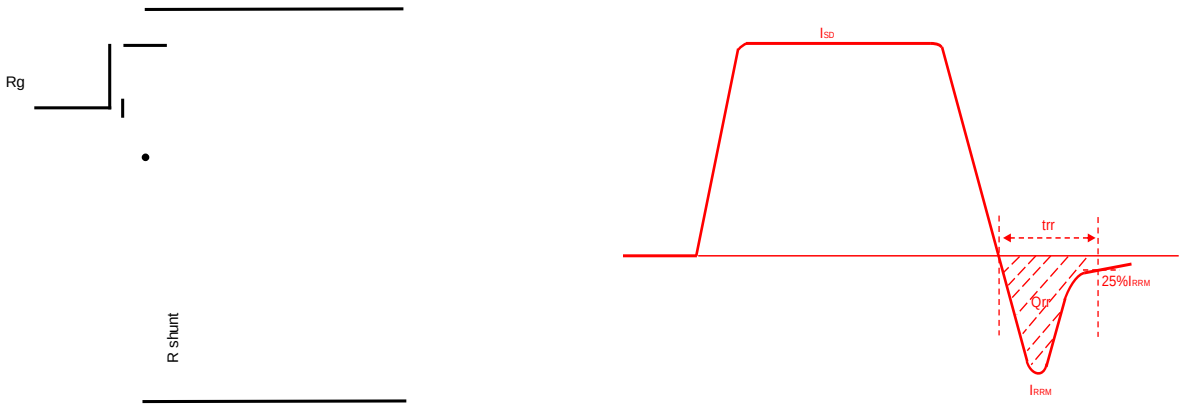


Figure D. Diode Recovery Test Circuit & Waveform

TO-247AB Package information

TO-247AB		
Dim	Min	Max
A		

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