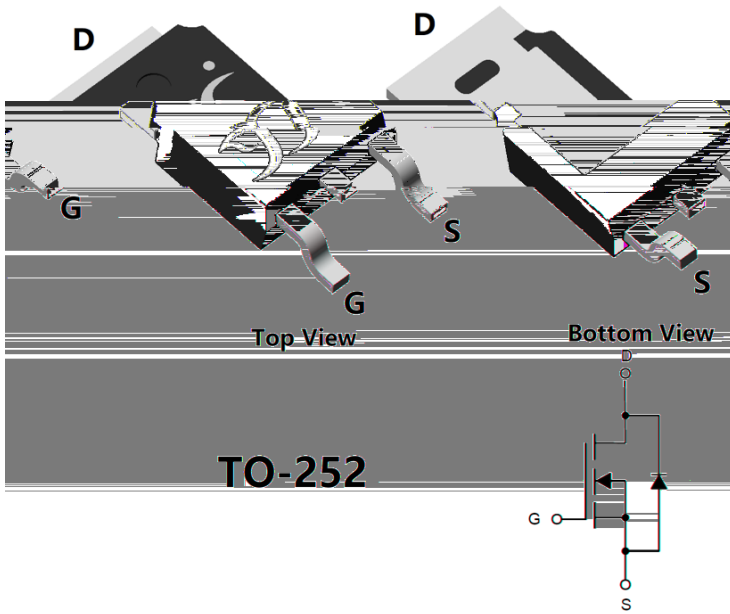


N-Channel Enhancement Mode Field Effect Transistor



Product Summary

- V_{DS} 650V
- I_D 11A
- $R_{DS(ON)}$ (at $V_{GS}=10V$) $< 380m\Omega$
- 100% EAS Tested
- 100% ∇V_{DS} Tested

General Description

- Super Junction High Voltage MOSFET technology
- Low $R_{DS(ON)}$ & FOM
- Extremely low switching loss
- Excellent stability and uniformity
- Moisture Sensitivity Level 1
- Epoxy Meets UL 94 V-0 Flammability Rating
- Halogen Free

Applications

- Server power
- Charger
- PD Adapter

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

Parameter		Symbol	Limit	Unit
Drain-source Voltage		V_{DS}	650	V
Gate-source Voltage		V_{GS}	± 30	V
Drain Current	$T_A=25^\circ C$	I_D	1.5	A
	$T_A=100^\circ C$		0.9	
	$T_C=25^\circ C$		11	
	$T_C=100^\circ C$		7	
Pulsed Drain Current ^A		I_{DM}	30	A
Avalanche energy ^B		EAS	3.6	mJ
Total Power Dissipation ^C	$T_A=25^\circ C$	P_D	2.5	W
	$T_A=100^\circ C$		1	
	$T_C=25^\circ C$		83	
	$T_C=100^\circ C$		33	
Junction and Storage Temperature Range		T_J, T_{STG}	-55~+150	$^\circ C$

■ Thermal resistance

Parameter		Symbol	Typ	Max	Units
Thermal Resistance Junction-to-Ambient ^D	Steady-State	$R_{\theta JA}$	40	50	$^\circ C/W$
Thermal Resistance Junction-to-Case	Steady-State	$R_{\theta JC}$	1.3	1.6	

■ Ordering Information (Example)

PREFERRED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
YJD11C65HJ	F1/F2	YJD11C65HJ	2500	/	25000	13"Reel



YJD11C65HJ

■ Electrical Characteristics (T_J=25°C unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250μA	650	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =650V, V _{GS} =0V	-	-	1	μA
		V _{DS} =650V, V _{GS} =0V, T _J =150°C	-	-	100	
Gate-Body Leakage Current	I _{GSS}	V _{GS} =±30V, 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 =11A	-	320	380	mΩ
Diode Forward Voltage	V _{SD}	I _S =11A, V _{GS} =0V	-	0.9	1.2	V
Gate resistance	R _G	f=1MHz	-	25	-	Ω
Maximum Body-Diode Continuous Current	I _S		-	-	11	A
Dynamic Parameters						
Input Capacitance	C _{iss}	V _{DS} =325V, V _{GS} =0V, f=1MHz	-	770	-	pF
Output Capacitance	C _{oss}		-	25	-	
Reverse Transfer Capacitance	C _{rss}		-	3.5	-	
Switching Parameters						
Total Gate Charge	Q _g	V _{GS} =10V, V _{DS} =325V, I _D =11A	-	21	-	nC
Gate-Source Charge	Q _{gs}		-	7	-	
Gate-Drain Charge	Q _{gd}		-	5.5	-	
Reverse Recovery Charge	Q _{rr}	I _F =11A, di/dt=100A/us	-	3.8	-	nC
Reverse Recovery Time	t _{rr}		-	324	-	ns
Turn-on Delay Time	t _{D(on)}	V _{GS} =10V, V _{DD} =325V, I _D =11A R _{GEN} =25Ω	-	19	-	ns
Turn-on Rise Time	t _r		-	38	-	
Turn-off Delay Time	t _{D(off)}		-	108	-	
Turn-off fall Time	t _f		-	36	-	

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

B. T_J=25°C, V_{DD}=50V, V_G=10V, R_G=25Ω, L=0.5mH, I_{AS}=3.8A.

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

D. The value of R_{θJA} is measured with the device mounted on 1 in² FR-4 board with 2oz. Copper, in the still air environment with T_A=25°C. The maximum allowed junction temperature of 150°C. The value in any given application depends on the user's specific board design.



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Typical Electrical and Thermal Characteristics Diagrams

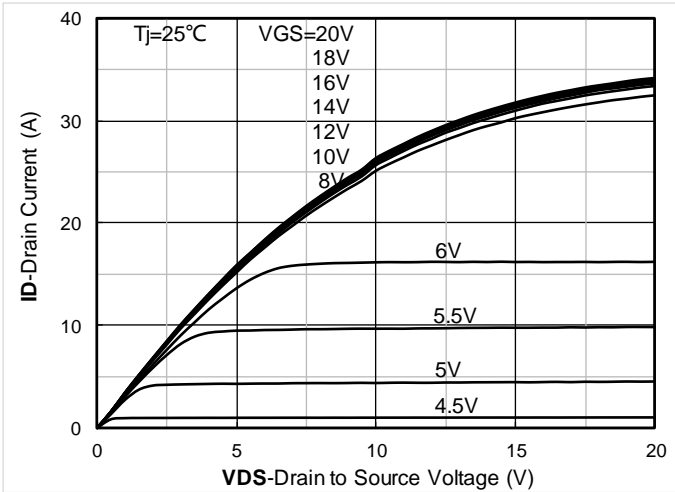


Figure 1. Output Characteristics

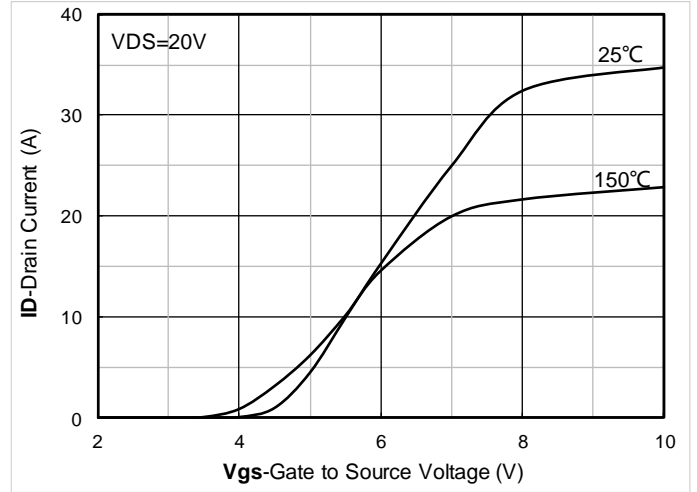


Figure 2. Transfer Characteristics

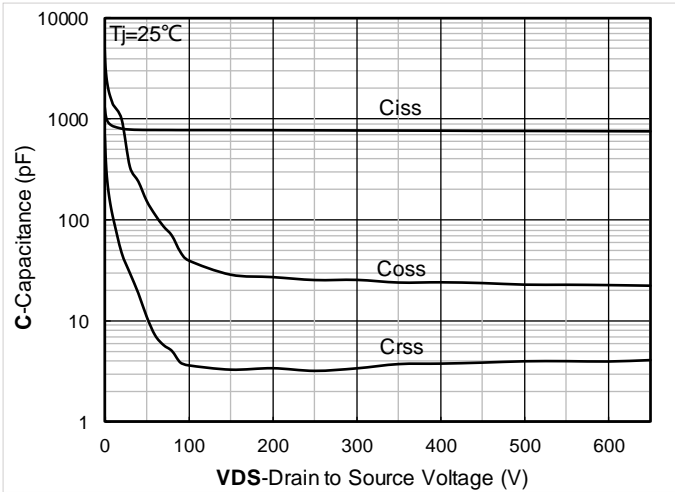


Figure 3. Capacitance Characteristics

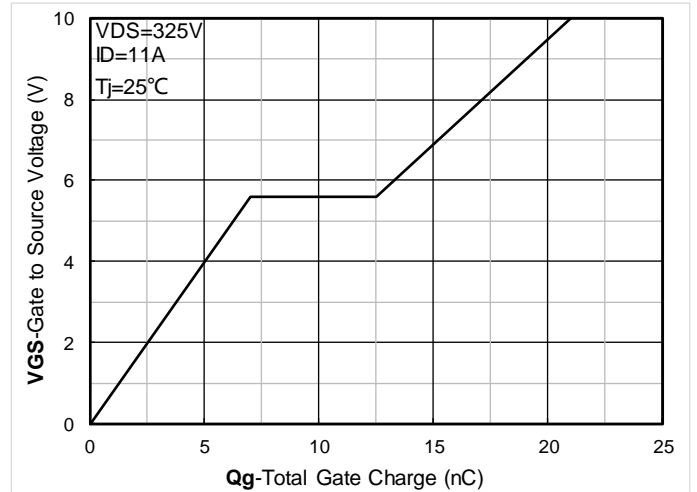


Figure 4. Gate Charge

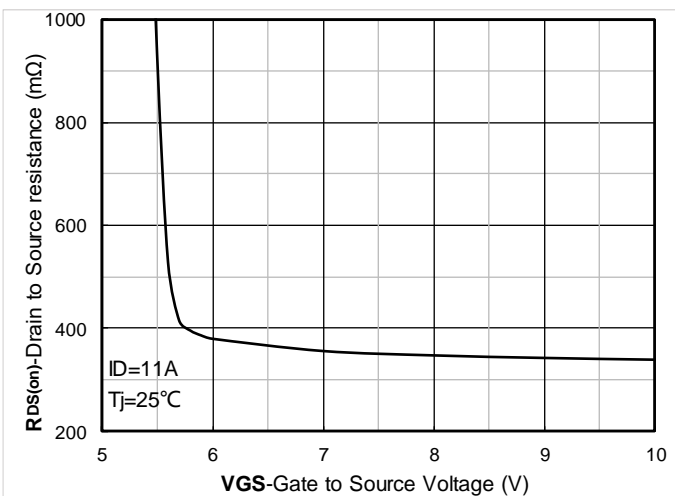


Figure 5. On-Resistance vs Gate to Source Voltage

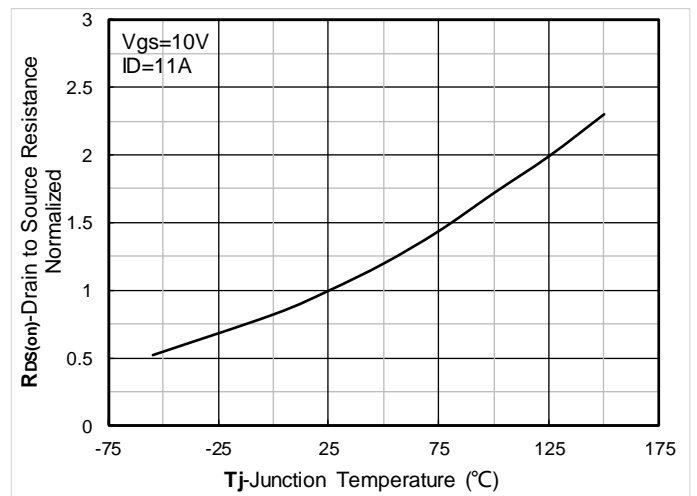


Figure 6. Normalized On-Resistance

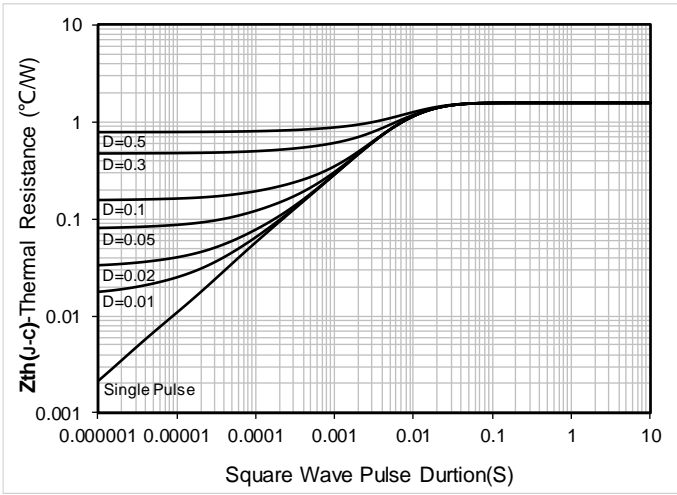


Figure 13. Maximum Transient Thermal Impedance

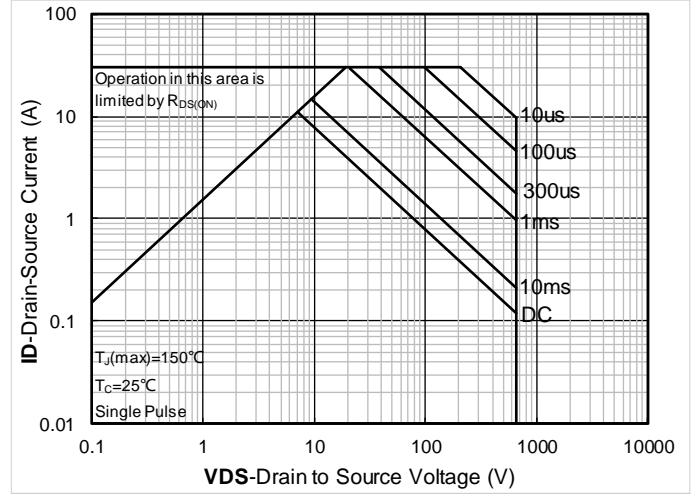


Figure 14. Safe Operation Area

■ Test Circuits & Waveforms

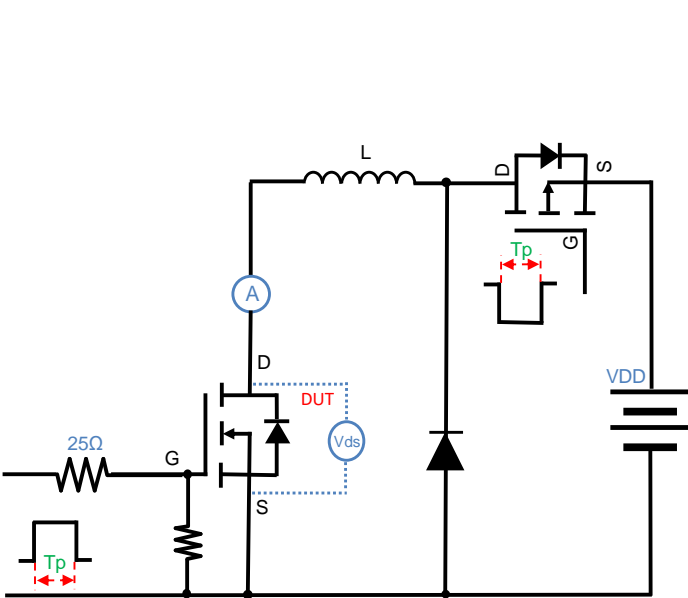


Figure A. Unclamped Inductive Switching (UIS) Test Circuit & Waveform

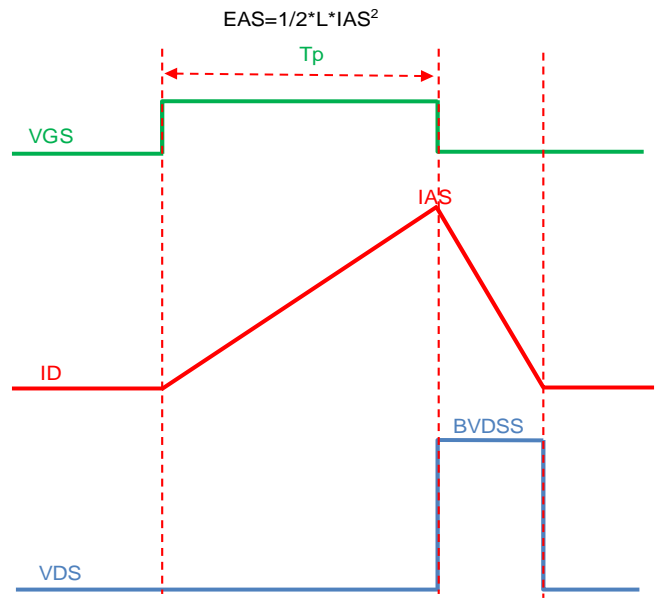




Figure B. Gate Charge Test Circuit & Waveform



Figure C. Resistive Switching Test Circuit & Waveform

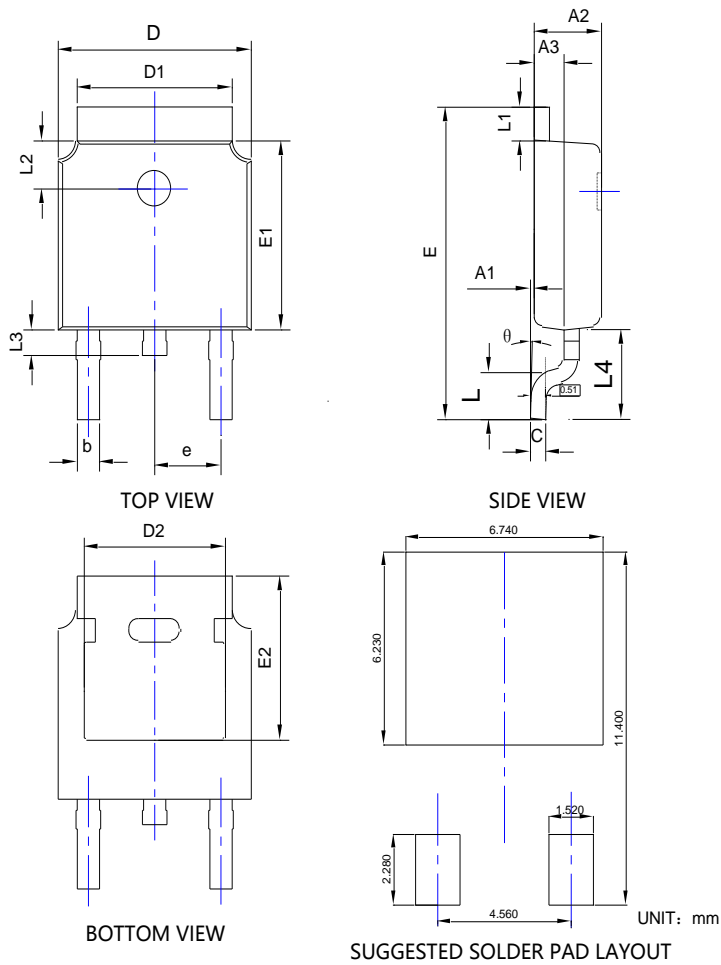


Figure D. Diode Recovery Test Circuit & Waveform



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■ TO-252-B Package information



SYMBOL	DIMENSIONS					
	INCHES			Millimeter		
	MIN.	NOM.	MAX.	MIN.	NOM.	MAX.
A1	0.000	---	0.008	0.000	---	0.200
A2	0.087	0.091	0.094	2.200	2.300	2.400
A3	0.035	0.039	0.043	0.900	1.000	1.100
b	0.026	0.030	0.034	0.660	0.760	0.860
c	0.018	0.020	0.023	0.460	0.520	0.580
D	0.256	0.260	0.264	6.500	6.600	6.700
D1	0.203	0.209	0.215	5.150	5.300	5.450
D2	0.181	0.189	0.195	4.600	4.800	4.950
E	0.390	0.398	0.406	9.900	10.100	10.300
E1	0.236	0.240	0.244	6.000	6.100	6.200
E2	0.203	0.209	0.215	5.150	5.300	5.450
e	0.090BSC			2.286BSC		
L	0.049	0.059	0.069	1.250	1.500	1.750
L1	0.035	---	0.050	0.900	---	1.270
L2	0.055	---	0.075	1.400	---	1.900
L3	0.024	0.031	0.039	0.600	0.800	1.000
L4	0.114REF			2.900REF		
θ	0°	---	10°	0°	---	10°

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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