



YJP70G10A

N-Channel Enhancement Mode Field Effect Transistor

Product Summary

- V_{DS} 100V
- I_D 70A
- $R_{DS(ON)}$ (at $V_{GS}=10V$) <8.6 mohm
- $R_{DS(ON)}$ (at $V_{GS}=4.5V$) <11 mohm
- 100% EAS Tested
- 100% ∇V_{DS} Tested

General Description

- Low $R_{DS(on)}$ & FOM
- Extremely low switching loss
- Excellent stability and uniformity
- Fast switching and soft recovery
- Epoxy Meets UL 94 V-0 Flammability Rating
- Halogen Free

Applications

- Power switching application
- Hard switched and high frequency circuits
- Uninterruptible power supply

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

Parameter		Symbol	Limit	Unit
Drain-source Voltage		V_{DS}	100	V
Gate-source Voltage		V_{GS}	± 20	V
Drain Current	$T_C=25^\circ C$	I_D	70	A
	$T_C=100^\circ C$		44.2	
Pulsed Drain Current ^A		I_{DM}	280	A
Avalanche energy ^B		EAS	200	mJ
Total Power Dissipation ^C	$T_C=25^\circ C$	P_D	125	W
	$T_C=100^\circ C$		50	
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	$t \leq 10S$	$R_{\theta JA}$	12	15	$^\circ C/W$
Thermal Resistance Junction-to-Ambient ^D	Steady-State		50	60	

Thermal Resistance Junction-



YJP70G10A

■ 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	100			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =100V, 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	1	1.8	3	V
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} = 10V, I _D =20A		7.2	8.6	mΩ
		V _{GS} = 4.5V, I _D =20A		8.8	11	mΩ
Diode Forward Voltage	V _{SD}	I _S =20A, V _{GS} =0V			1.3	V
Maximum Body-Diode Continuous Current	I _S				70	A
Gate resistance	R _G	f= 1 MHz, Open drain		0.68		Ω
Dynamic Parameters						
Input Capacitance	C _{iss}	V _{DS} =50V, V _{GS} =0V, f=1MHZ		2270		pF
Output Capacitance	C _{oss}			797		
Reverse Transfer Capacitance	C _{rss}			36		
Switching Parameters						
Total Gate Charge	Q _g	V _{GS} =10V, V _{DS} =50V, I _D =25A		32		nC
Gate-Source Charge	Q _{gs}			11.1		
Gate-Drain Charge	Q _{gd}			4.78		
Reverse Recovery Charge	Q _{rr}	I _F =20A, di/dt=100A/us		84		ns
Reverse Recovery Time	t _{rr}			51.5		
Turn-on Delay Time	t _{D(on)}	V _{GS} =10V, V _{DD} =50V, I _D =25A R _{GEN} =2.2Ω		51		ns
Turn-on Rise Time	t _r			14.4		
Turn-off Delay Time	t _{D(off)}			69.2		
Turn-off fall Time	t _f			20.6		

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

B. V_{DD}=50V, R_G=25Ω, L=2mH, I_{AS}=14.2A

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

D. The value of R_{θJA} is measured with the device mounted on 1in2 FR-4 board with 2oz. Copper, in a still air environment with T_A=25 C. The Power dissipation P_{DSM} is based on R_{θJA} t_s ≤ 10s and the maximum allowed junction temperature of 150 C. The value in any given application depends on the user's specific board design.



Typical Performance Characteristics

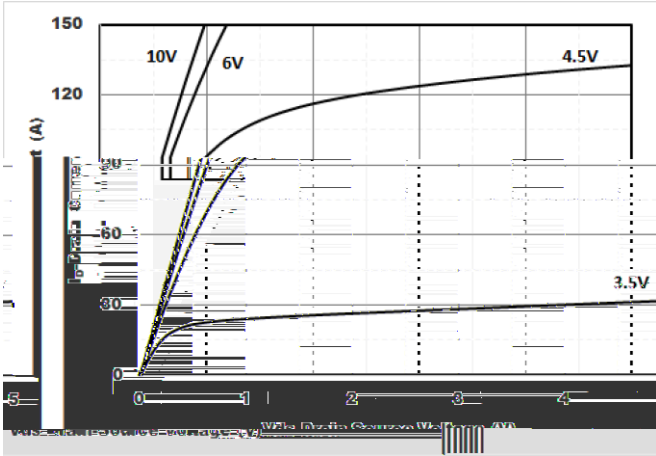


Figure1. Output Characteristics

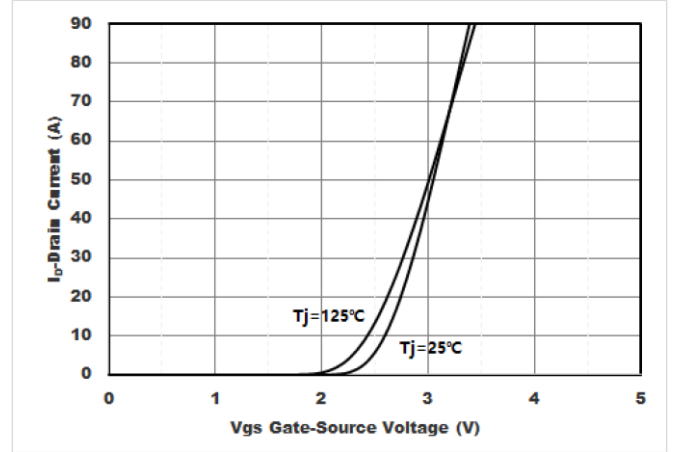


Figure2. Transfer Characteristics

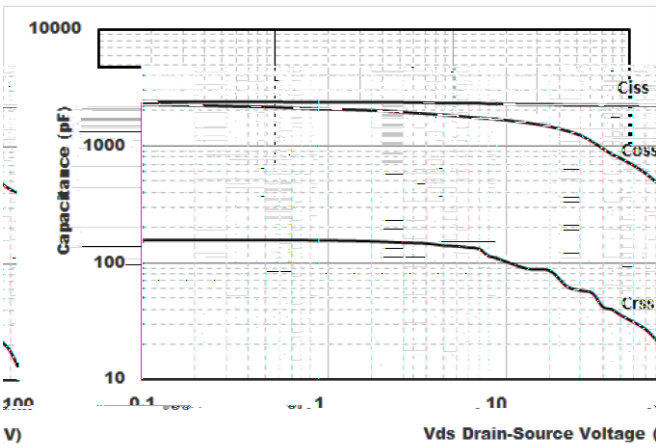


Figure3. Capacitance Characteristics

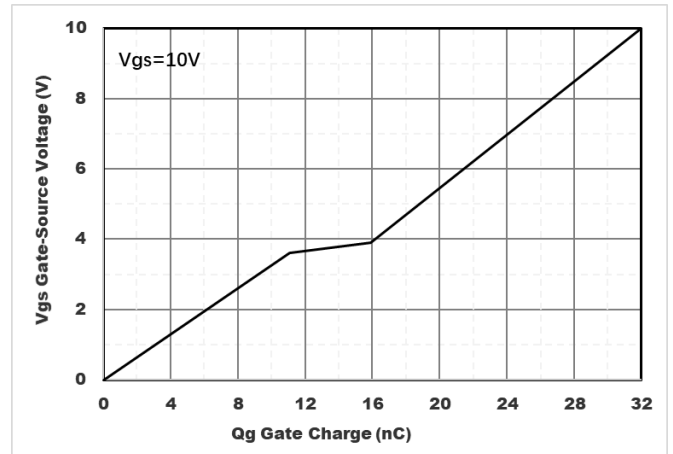


Figure4. Gate Charge

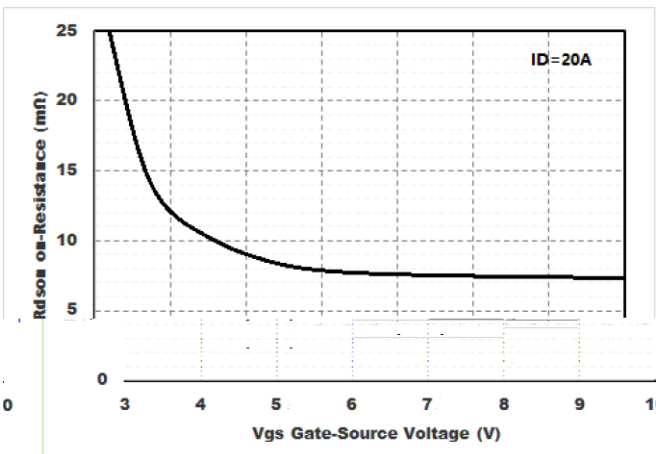


Figure5. On-Resistance vs. Drain Current and Gate Voltage

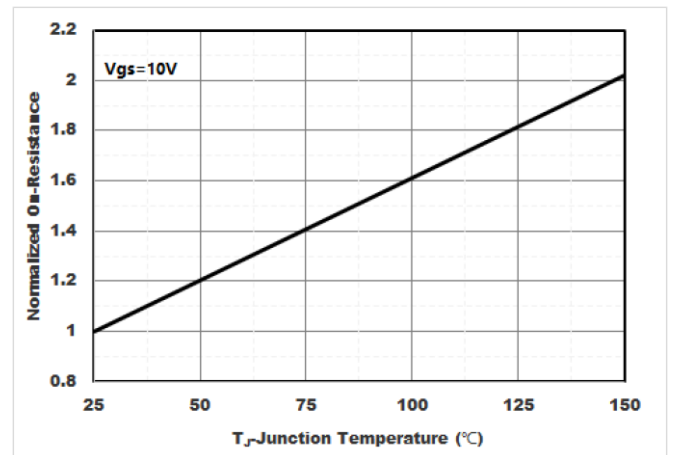


Figure6. Normalized On-Resistance



YJP70G10A

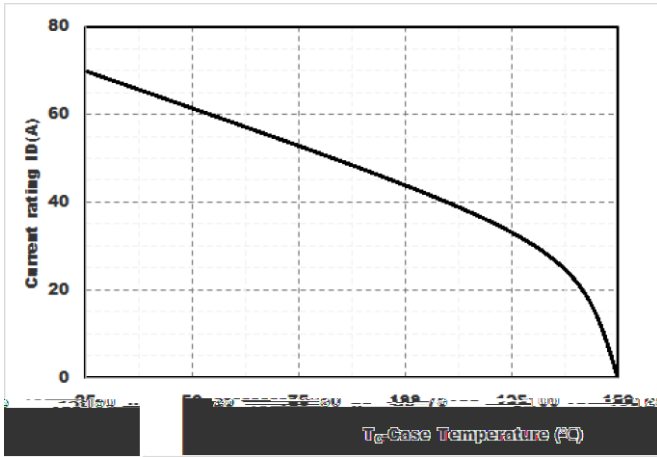


Figure7. Drain current

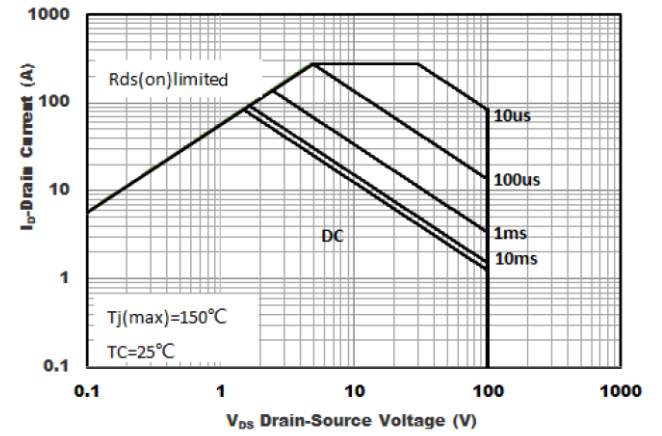


Figure8. Safe Operation Area

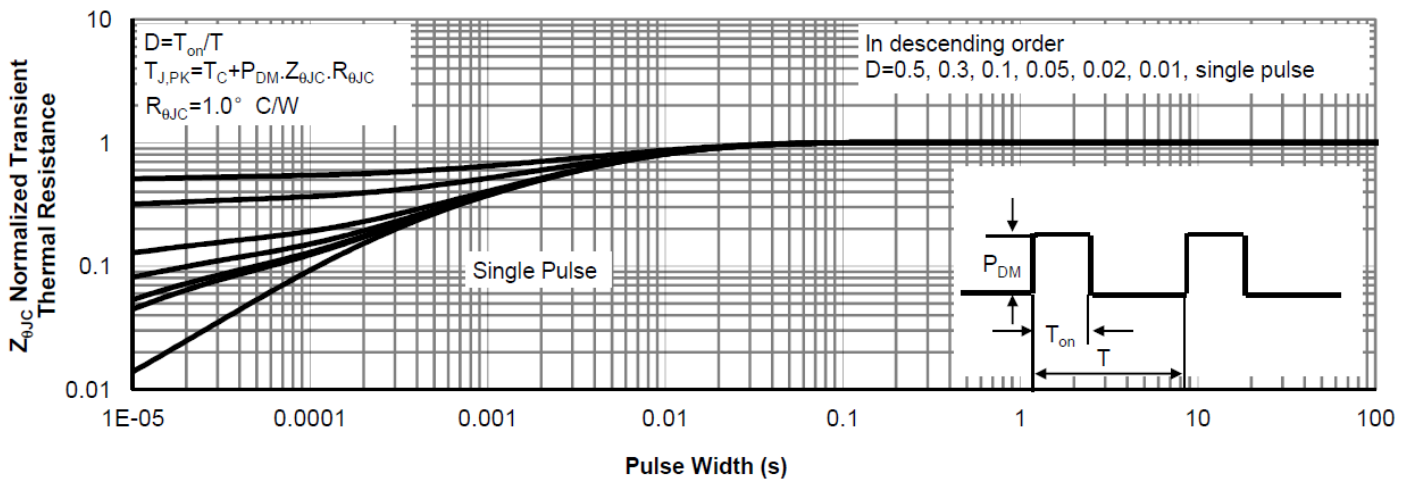
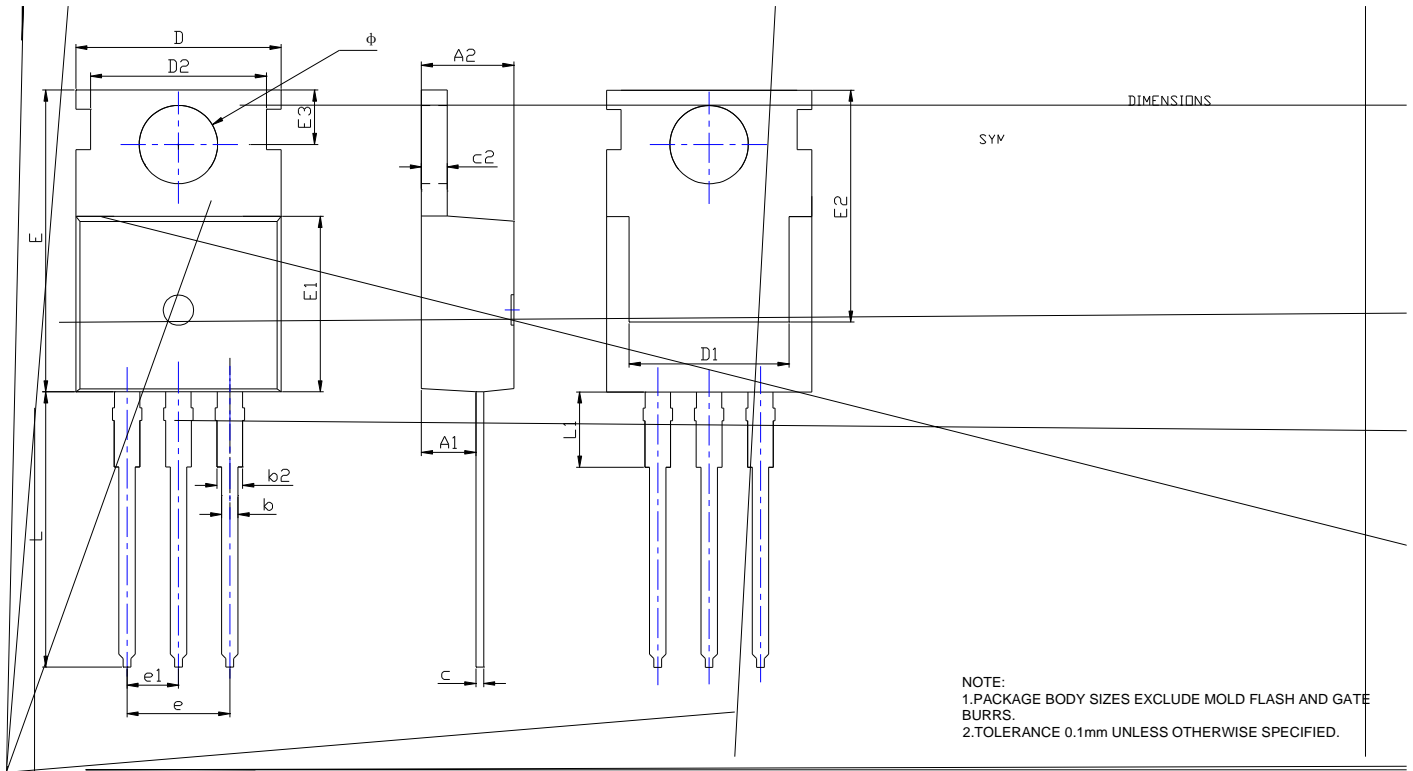


Figure9. Normalized Maximum Transient thermal impedance



YJP70G10A

■ TO-220AB-C Package information





YJP70G10A

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