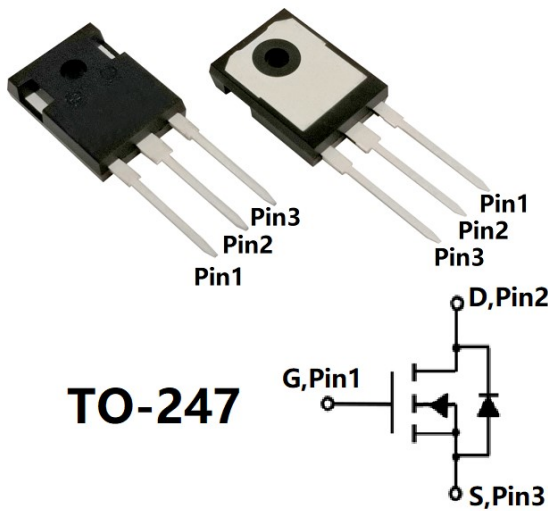


## N-Channel Enhancement Mode Field Effect Transistor



**TO-247**

### Product Summary

- $V_{DS}$  100V
- $I_D$  60A
- $R_{DS(ON)}$ ( at  $V_{GS}=10V$ ) < 17.5 mohm
- 100% UIS Tested
- 100%  $\nabla V_{DS}$  Tested

### General Description

- Low  $R_{DS(on)}$  & FOM
- Extremely low switching loss
- Excellent stability and uniformity
- Fast switching and soft recovery

### Applications

- Switching converters
- Motor drivers
- Power management

### ■ 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	$V_{GS}$	$\pm 20$	V
Drain Current	$I_D$	$T_C=25^\circ C$	60
		$T_C=100^\circ C$	38
Pulsed Drain Current <sup>A</sup>	$I_{DM}$	300	A
Avalanche energy <sup>B</sup>	$E_{AS}$	81	mJ
Total Power Dissipation <sup>C</sup>	$P_D$	$T_C=25^\circ C$	260
		$T_C=100^\circ C$	104
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 <sup>D</sup>	$R_{\theta JA}$	5	8	$^\circ C/W$
Thermal Resistance Junction-to-Ambient <sup>D</sup>		Steady-State	30	
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	0.4	0.48	

### ■ Ordering Information (Example)

PREFERRED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
YJN60G10B	B1	YJN60G10B	30	360	1800	Tube



# YJN60G10B

## ■ Electrical Characteristics (T<sub>j</sub>=25°C unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
<b>Static Parameter</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> =250μA	100			V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =100V, V <sub>GS</sub> =0V			1	μA
Gate-Body Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> = ±20V, V <sub>DS</sub> =0V			±100	nA
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> =250μA	2	2.8	4	V
Static Drain-Source On-Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> = 10V, I <sub>D</sub> =20A		15	17.5	mΩ
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =20A, V <sub>GS</sub> =0V			1.3	V
Maximum Body-Diode Continuous Current	I <sub>S</sub>				45	A
Gate resistance	R <sub>G</sub>	f= 1 MHz, Open drain		1		Ω
<b>Dynamic Parameters</b>						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =50V, V <sub>GS</sub> =0V, f=1MHZ		1135		pF
Output Capacitance	C <sub>oss</sub>			399		
Reverse Transfer Capacitance	C <sub>rss</sub>			18		
<b>Switching Parameters</b>						
Total Gate Charge	Q <sub>g</sub>	V <sub>GS</sub> =10V, V <sub>DS</sub> =50V, I <sub>D</sub> =25A		16		nC
Gate-Source Charge	Q <sub>gs</sub>			5.6		
Gate-Drain Charge	Q <sub>gd</sub>			2.4		
Reverse Recovery Charge	Q <sub>rr</sub>	I <sub>F</sub> =20A, di/dt=100A/us		42		ns
Reverse Recovery Time	t <sub>rr</sub>			39.8		
Turn-on Delay Time	t <sub>D(on)</sub>	V <sub>GS</sub> =10V, V <sub>DD</sub> =50V, I <sub>D</sub> =25A R <sub>GEN</sub> =2.2Ω		39.2		ns
Turn-on Rise Time	t <sub>r</sub>			11		
Turn-off Delay Time	t <sub>D(off)</sub>			53.2		
Turn-off fall Time	t <sub>f</sub>			15.8		

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

B. V<sub>DD</sub>=50V, R<sub>G</sub>=25Ω, L=0.5mH, I<sub>AS</sub>=25A,.

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

D. The value of R<sub>qJA</sub> is measured with the device mounted on 1in2 FR-4 board with 2oz. Copper, in a still air environment with T<sub>A</sub> =25°C. The Power dissipation PDSM is based on R<sub>qJA</sub> t<sub>s</sub> ≤ 10s and 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 Performance Characteristics

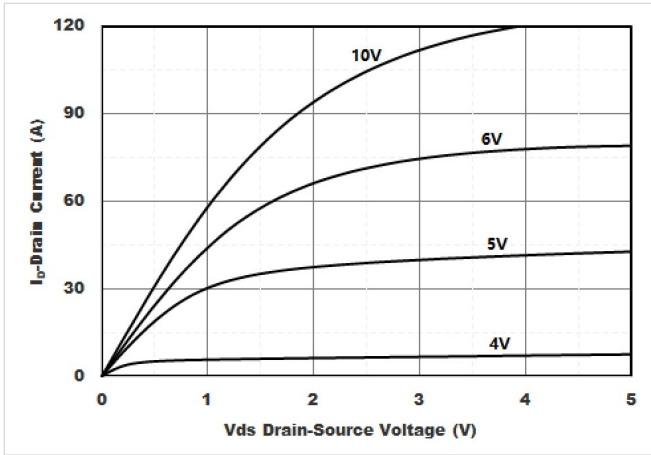


Figure1. Output Characteristics

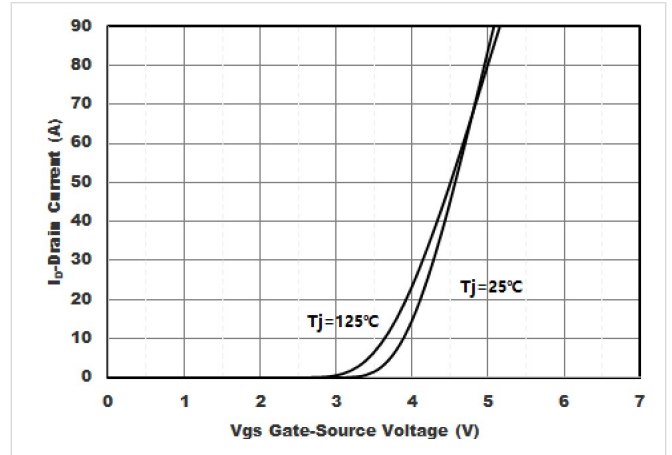


Figure2. Transfer Characteristics

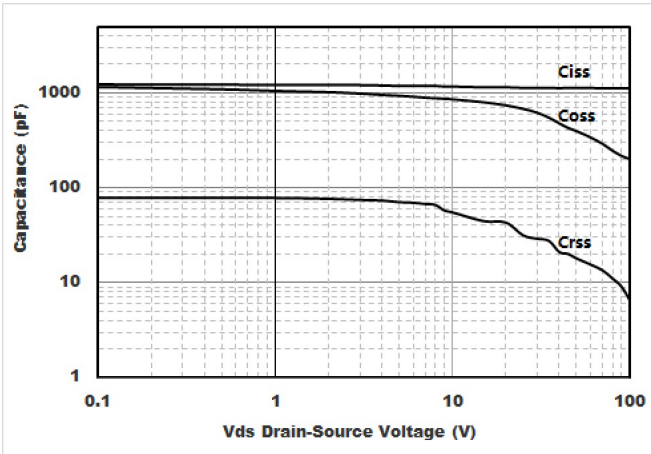


Figure3. Capacitance Characteristics

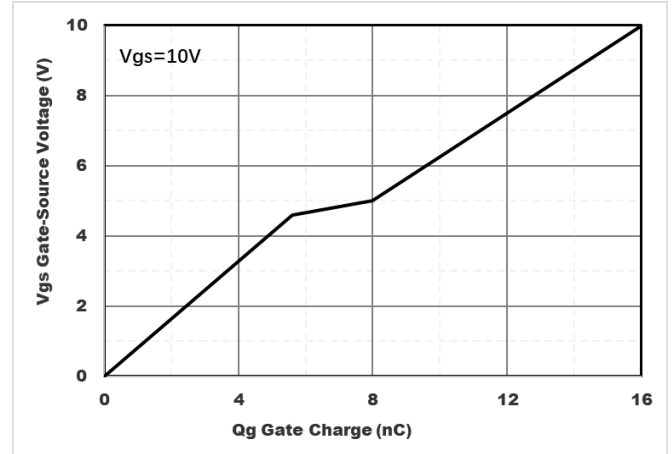


Figure4. Gate Charge

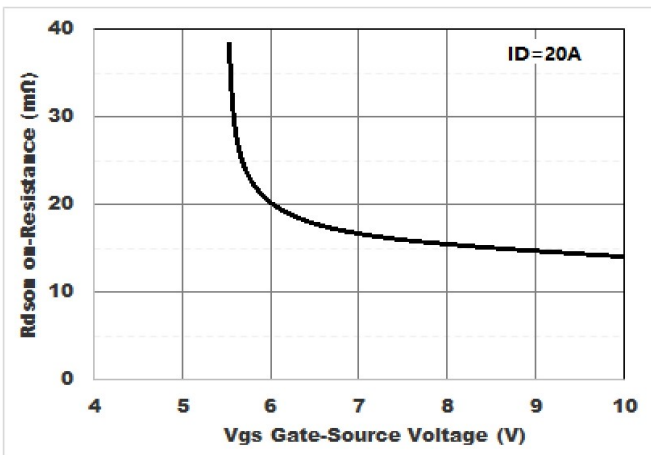


Figure5. : On-Resistance vs. Drain Current and Gate Voltage

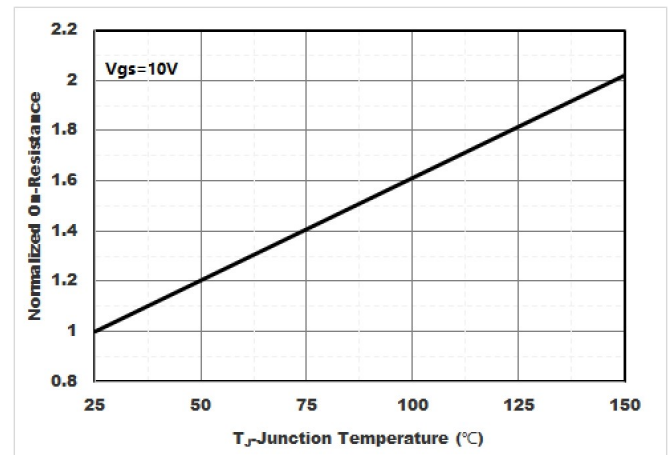


Figure6. Normalized On-Resistance



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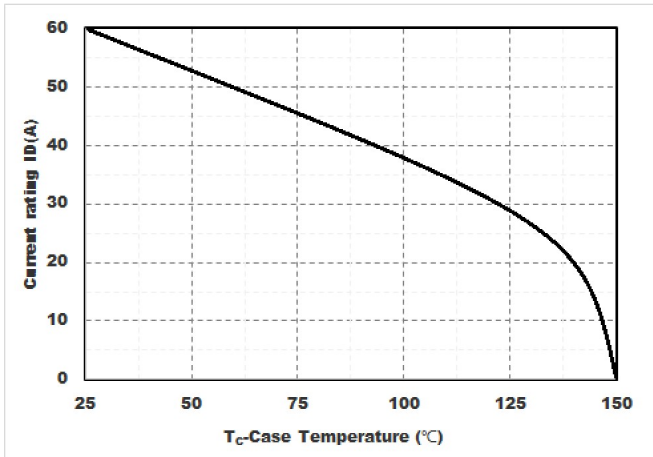


Figure7. Drain current

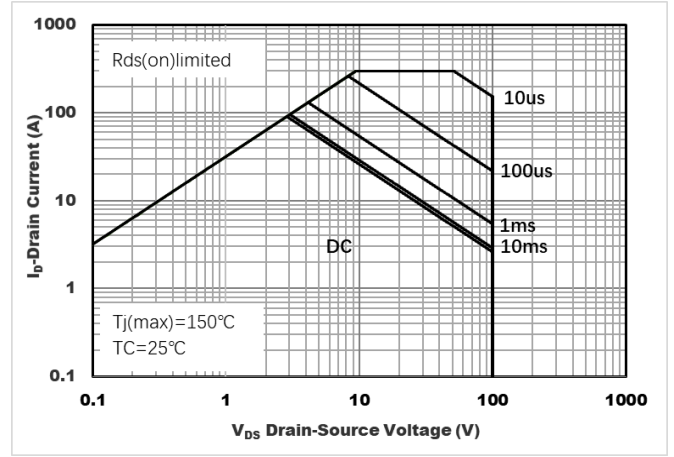


Figure8.Safe Operation Area

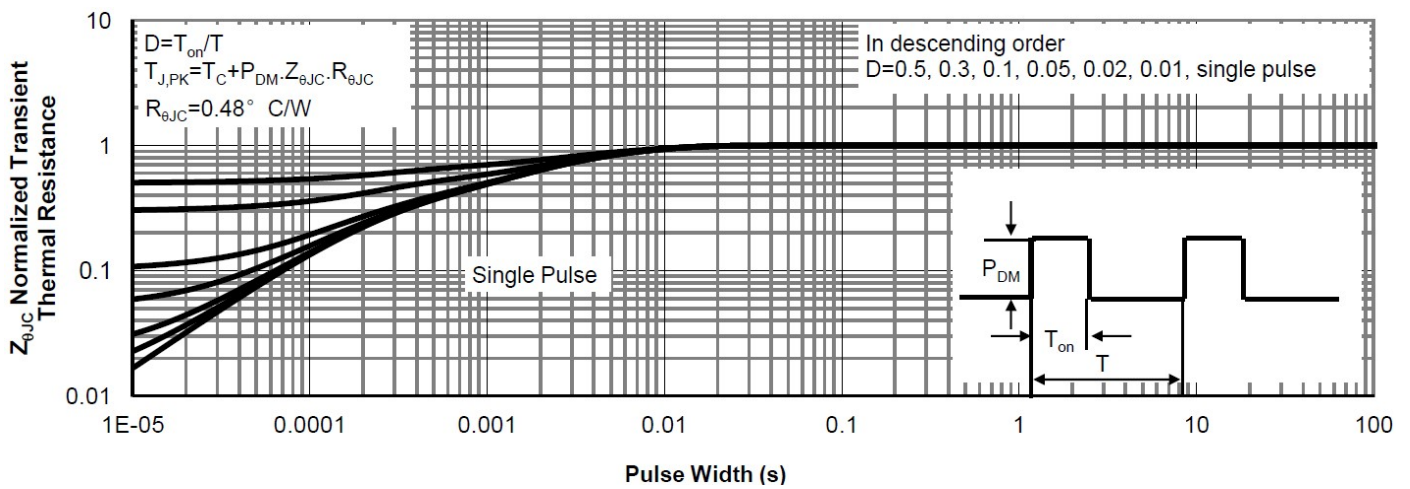
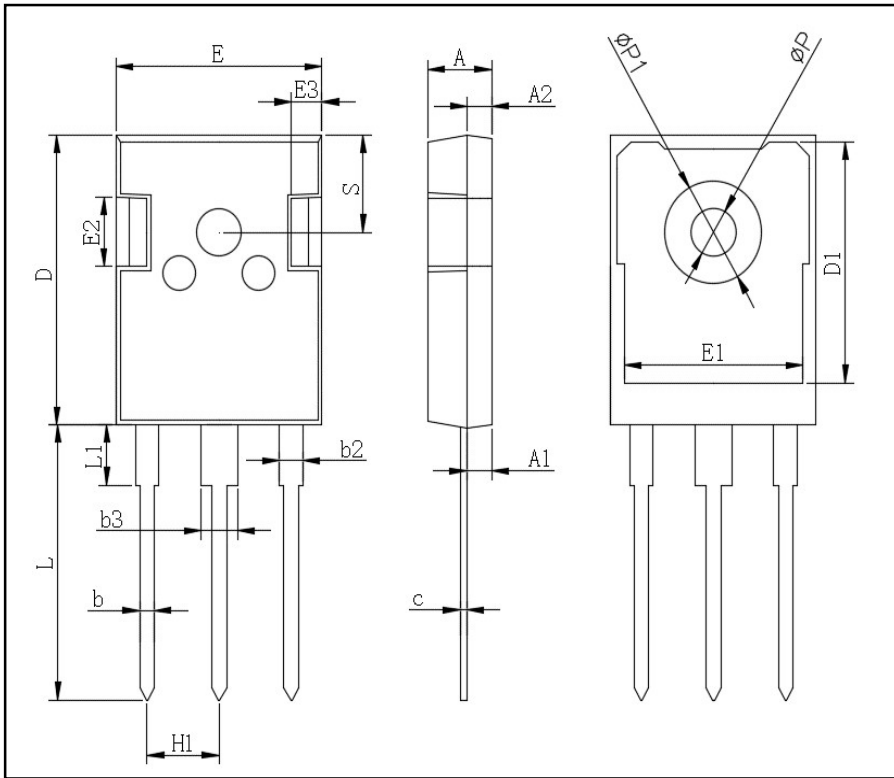


Figure9.Normalized Maximum Transient thermal impedance



# YJN60G10B

## ■ TO-247 Package Information



TO-247AB		
Dim	Min	Max
A	4.80	5.20
A1	2.21	2.61
A2	1.85	2.15
b	1.0	1.4
b2	1.91	2.21
C	0.5	0.7
D	20.70	21.30
D1	16.25	16.85
E	15.50	16.10
E1	13.0	13.6
E2	4.80	5.20
E3	2.30	2.70
L	19.62	20.22
L1	-	4.30
$\phi P$	3.40	3.80
$\phi P1$	-	7.30
S	6.15TYP	
H1	5.44TYP	
b3	2.80	3.20



# YJN60G10B

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