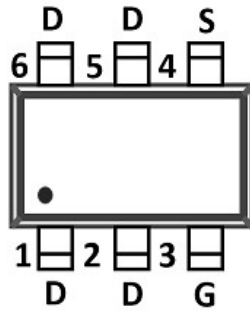
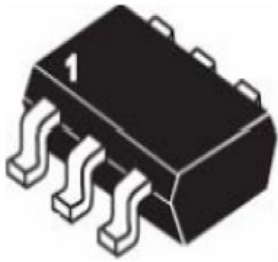
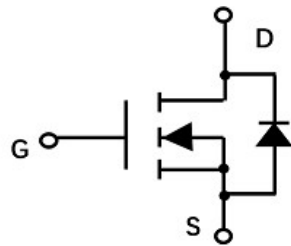


N-Channel Enhancement Mode Field Effect Transistor



SOT-23-6L



Product Summary

- V_{DS} 20V
- I_D 5.5A
- $R_{DS(ON)}$ (at $V_{GS}= 4.5V$) <25mohm
- $R_{DS(ON)}$ (at $V_{GS}= 2.5V$) <32mohm
- $R_{DS(ON)}$ (at $V_{GS}= 1.8V$) <49mohm

General Description

- Trench Power LV MOSFET technology
- High density cell design for low $R_{DS(ON)}$
- High Speed switching

Applications

- Battery protection
- Load switch
- Power management

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

Parameter		Symbol	Limit	Unit
Drain-source Voltage		V_{DS}	20	V
Gate-source Voltage		V_{GS}	± 10	V
Drain Current	$T_A=25^\circ\text{C}$	I_D	5.5	A
	$T_A=70^\circ\text{C}$		4.4	
Pulsed Drain Current ^A		I_{DM}	22	A
Total Power Dissipation @ $T_A=25^\circ\text{C}$		P_D	1.1	W
Thermal Resistance Junction-to-Ambient ^B		$R_{\theta JA}$	114	$^\circ\text{C}/\text{W}$
Junction and Storage Temperature Range		T_J, T_{STG}	-55~+150	$^\circ\text{C}$

■ Ordering Information (Example)

PREFERRED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
YJJ12N02A	F2	0212	3000	30000	120000	7"



YJJ12N02A

■ 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	20			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =20V, V _{GS} =0V			1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} = ±10V, V _{DS} =0V			±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D =250μA	0.45	0.62	1	V
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =4.5V, I _D =4.5A		19.5	25	mΩ
		V _{GS} =2.5V, I _D =3.0A		25	32	
		V _{GS} =1.8V, I _D =2.7A		33	49	
Diode Forward Voltage	V _{SD}	I _S =5.5A, V _{GS} =0V			1.2	V
Dynamic Parameters						
Input Capacitance	C _{iss}	V _{DS} =15V, V _{GS} =0V, f=1MHZ		418		pF
Output Capacitance	C _{oss}			82		
Reverse Transfer Capacitance	C _{rss}			70		
Switching Parameters						
Total Gate Charge	Q _g	V _{GS} =4.5V, V _{DS} =10V, I _D =4.5A		6.1		nC
Gate-Source Charge	Q _{gs}			1.1		
Gate-Drain Charge	Q _{gd}			2.0		
Reverse Recovery Charge	Q _{rr}	I _F =4.5A, di/dt=100A/us		1.4		
Reverse Recovery Time	t _{rr}			18		
Turn-on Delay Time	t _{D(on)}	V _{GS} =4.5V, V _{DD} =10V, I _D =10A, R _{GEN} =3Ω		4		ns
Turn-on Rise Time	t _r			20		
Turn-off Delay Time	t _{D(off)}			23		
Turn-off fall Time	t _f			23		

A. Pulse Test: Pulse Width ≤ 300us, Duty cycle ≤ 2%.

B. R_{θJA} is the sum of the junction-to-lead and lead-to-ambient thermal resistance, where the lead thermal reference is defined as the solder mounting surface of the drain pins. R_{θJL} is guaranteed by design, while R_{θJA} is determined by the board design. The maximum rating presented here is based on mounting on a 1 in 2 pad of 2oz copper.



■ Typical Performance Characteristics

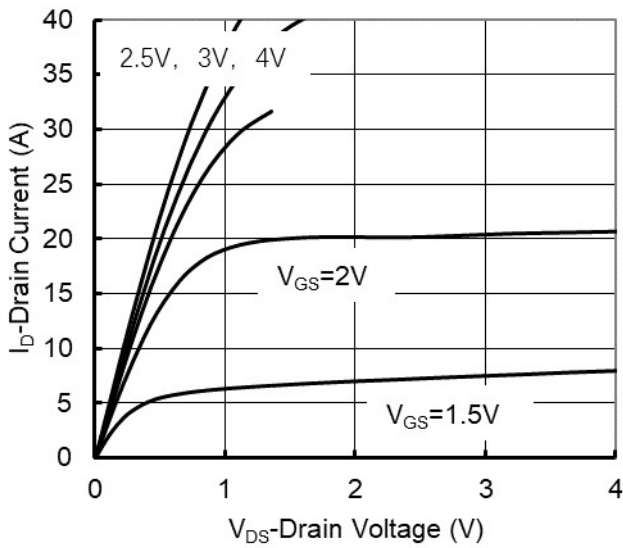


Figure1. Output Characteristics

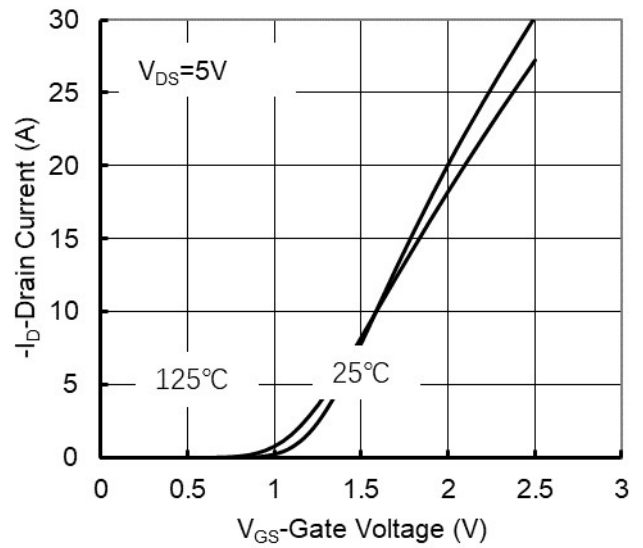


Figure2. Transfer Characteristics

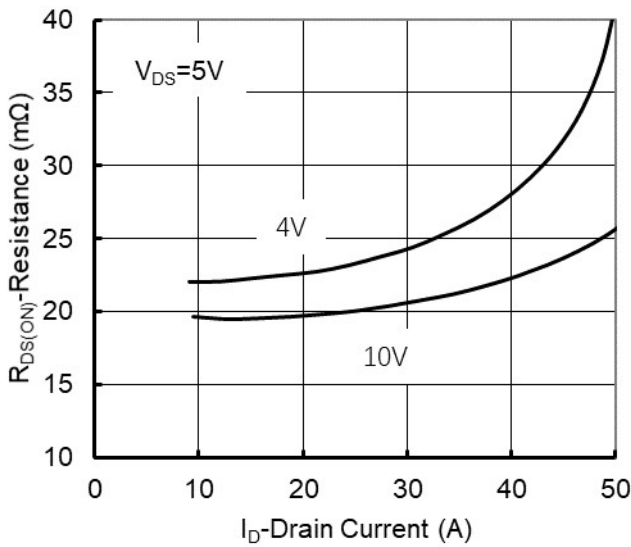


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

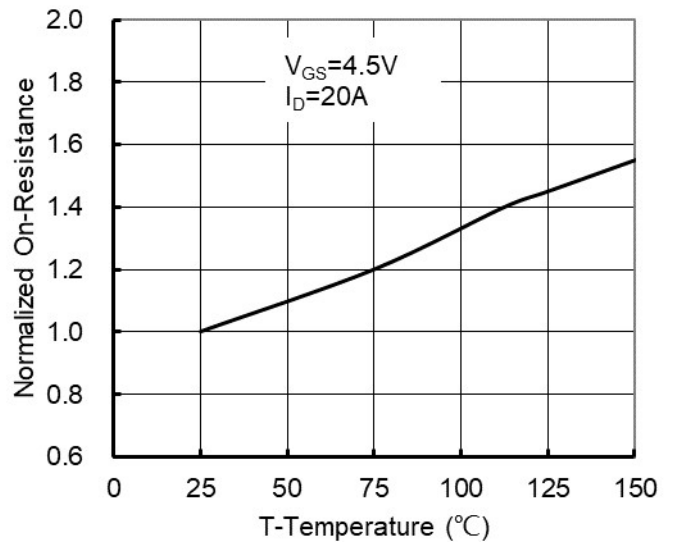


Figure 4: On-Resistance vs. Junction Temperature

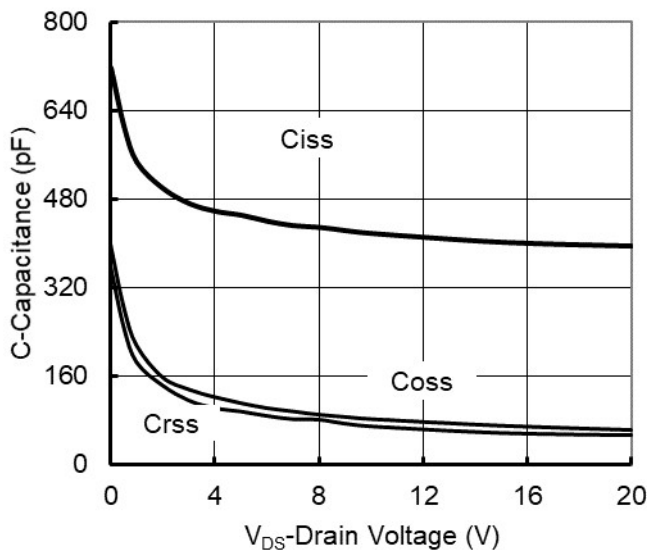


Figure5. Capacitance Characteristics

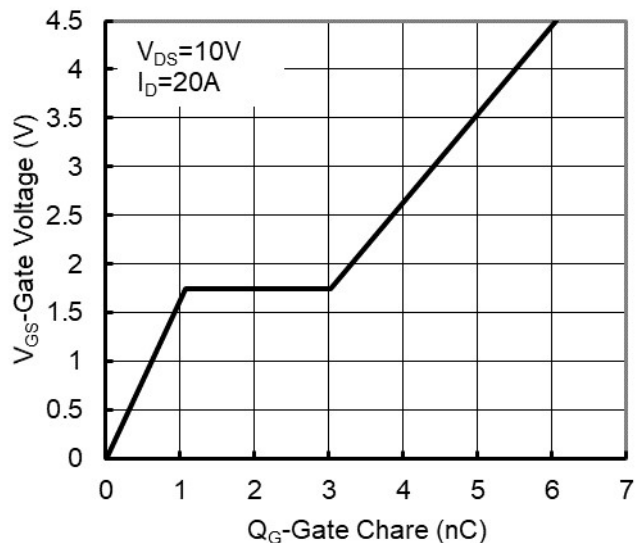


Figure6. Gate Charge



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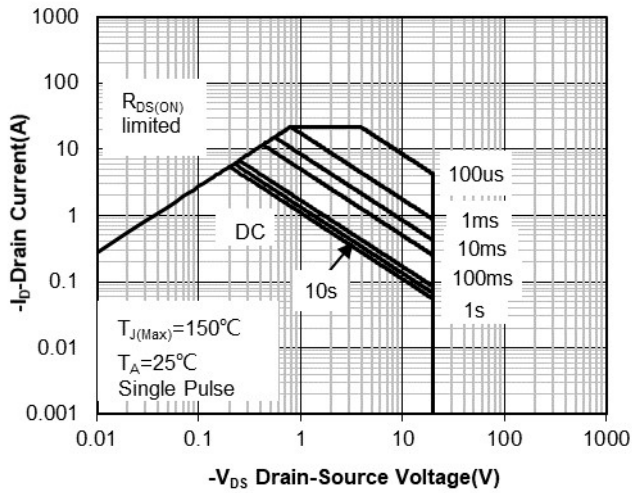


Figure7. Safe Operation Area

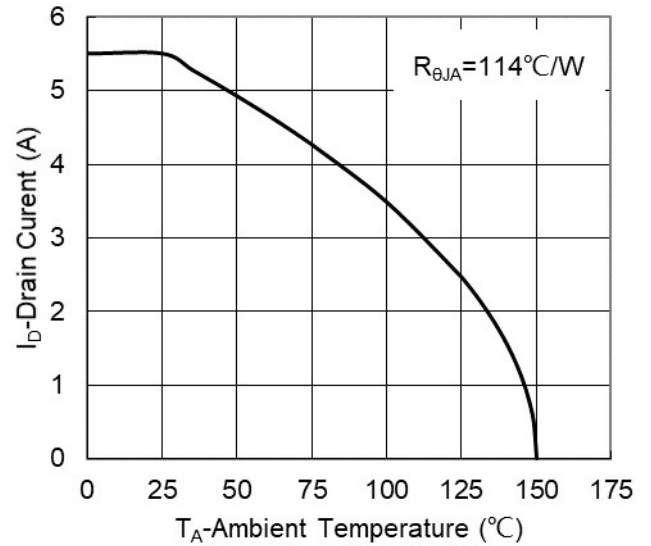


Figure8. Maximum Continuous Drain Current vs Ambient Temperature

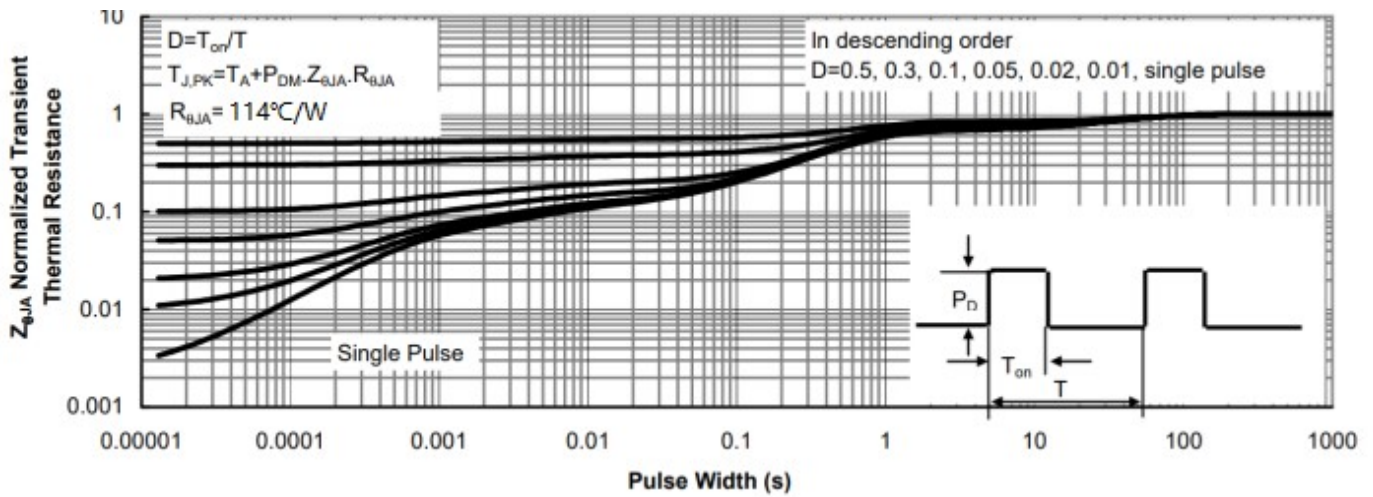


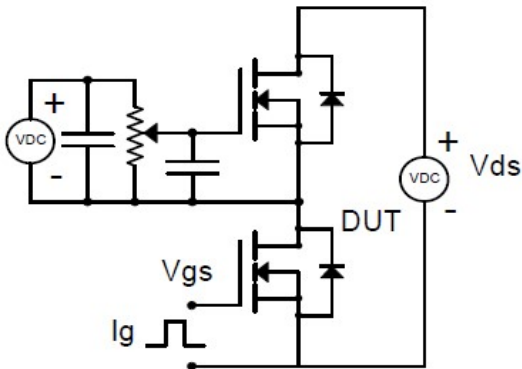
Figure9. Normalized Maximum Transient Thermal Impedance



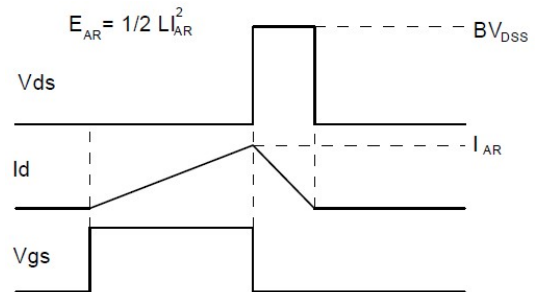
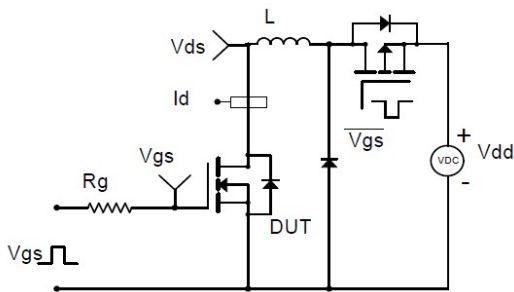
Resistive Switching Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



Gate Charge Test Circuit & Waveform

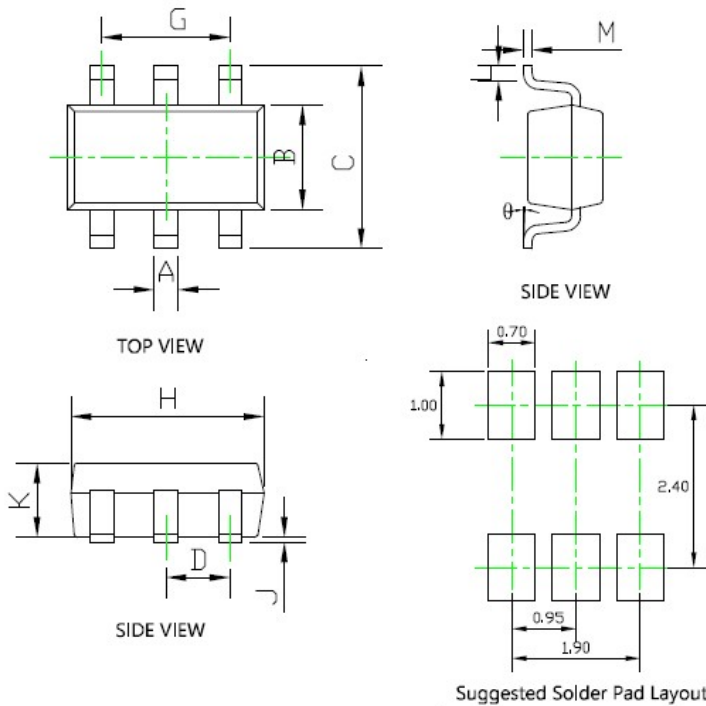


Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



YJJ12N02A

■ SOT-23-6L Package Information



Note:
 1. Controlling dimension in millimeters.
 2. General tolerance: $\pm 0.05\text{mm}$.
 3. The pad layout is for reference purposes only.

SYMBOL	DIMENSIONS			
	INCHES		Millimeter	
	MIN.	MAX.	MIN.	MAX.
A	0.012	0.020	0.300	0.500
B	0.059	0.067	1.500	1.700
C	0.104	0.116	2.650	2.950
D	0.037BSC		0.950BSC	
G	0.075BSC		1.900BSC	
H	0.111	0.119	2.820	3.020
J	0.000	0.004	0.000	0.100
K	0.041	0.045	1.050	1.150
L	0.012	0.024	0.300	0.600
M	0.004	0.008	0.100	0.200
θ	0°	8°	0°	8°



YJJ12N02A

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