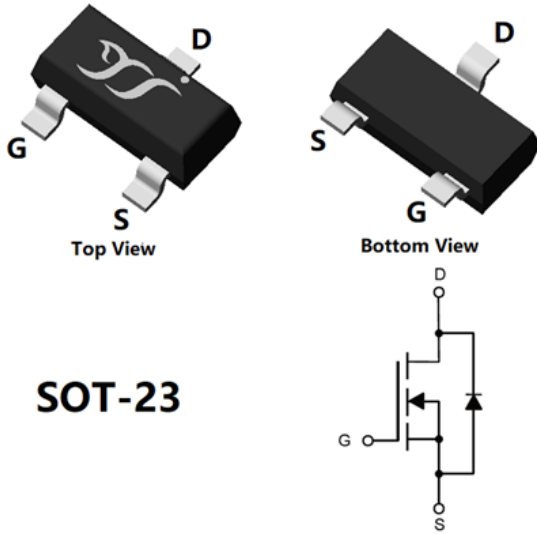


N-Channel Enhancement Mode Field Effect Transistor



SOT-23

Product Summary

- V_{DS} 100V
- I_D 3A
- $R_{DS(ON)}$ (at $V_{GS}=10V$) <140 mohm
- $R_{DS(ON)}$ (at $V_{GS}=4.5V$) <300 mohm

General Description

- Split Gate Trench MOSFET technology
- Excellent package for heat dissipation
- High density cell design for low $R_{DS(ON)}$
- Moisture Sensitivity Level 1
- Epoxy Meets UL 94 V-0 Flammability Rating
- Halogen Free

Applications

- DC-DC Converters
- Power management functions

■ 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	I_D	$T_A=25^\circ C$	3	A
		$T_A=70^\circ C$	2.4	
Pulsed Drain Current ^A	I_{DM}	12	A	
Avalanche energy ^B	E_{AS}	8	mJ	
Total Power Dissipation ^C	P_D	$T_A=25^\circ C$	1.2	W
		$T_A=70^\circ C$	0.8	
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	$R_{\theta JA}$	82	104	$^\circ C/W$
Thermal Resistance Junction-to-Ambient ^{D E}		Steady-State	111	
Thermal Resistance Junction-to-Case	$R_{\theta JL}$	43	52	

■ Ordering Information (Example)

PREFERRED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
YJL03G10A	F2	1003.	3000	30000	120000	7"Reel



YJL03G10A

■ 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	1.0	1.8	2.5	V
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} = 10V, I _D =3A		110	140	mΩ
		V _{GS} = 4.5V, I _D =2A		160	300	mΩ
Diode Forward Voltage	V _{SD}	I _S =3A, V _{GS} =0V			1.3	V
Maximum Body-Diode Continuous Current	I _S				3	A
Gate resistance	R _G	f= 1 MHz		8		Ω
Dynamic Parameters						
Input Capacitance	C _{iss}	V _{DS} =50V, V _{GS} =0V, f=100KHZ		206		pF
Output Capacitance	C _{oss}			28.9		
Reverse Transfer Capacitance	C _{rss}			1.4		
Switching Parameters						
Total Gate Charge	Q _g	V _{GS} =10V, V _{DS} =50V, I _D =3A		4.3		nC
Gate-Source Charge	Q _{gs}			1.5		
Gate-Drain Charge	Q _{gd}			1.1		
Reverse Recovery Charge	Q _{rr}	I _F =3A, di/dt=100A/us		39.4		ns
Reverse Recovery Time	t _{rr}			32.1		
Turn-on Delay Time	t _{D(on)}	V _{GS} =10V, V _{DD} =50V, I _D =3A R _{GEN} =2Ω		14.7		ns
Turn-on Rise Time	t _r			3.5		
Turn-off Delay Time	t _{D(off)}			20.9		
Turn-off fall Time	t _f			2.7		

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

B. V_{DD}=50V, R_G=25Ω, L=0.5mH.

C. Pd is based on max. junction temperature, using ≤10us junction-to-ambient 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 value in any given application depends on the user's specific board design.

E. The R_{θJA} is the sum of the thermal impedance from junction to lead R_{θJL} and lead to ambient



■ Typical Performance Characteristics

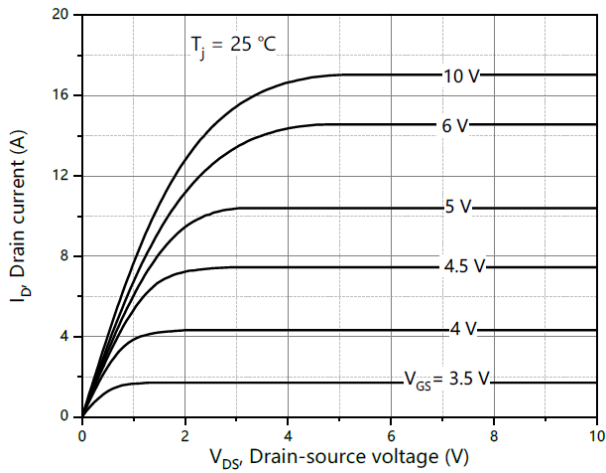


Figure1. Output Characteristics

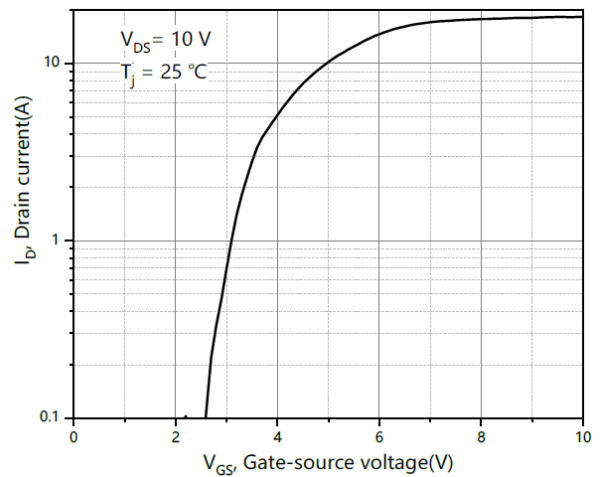


Figure2. Transfer Characteristics

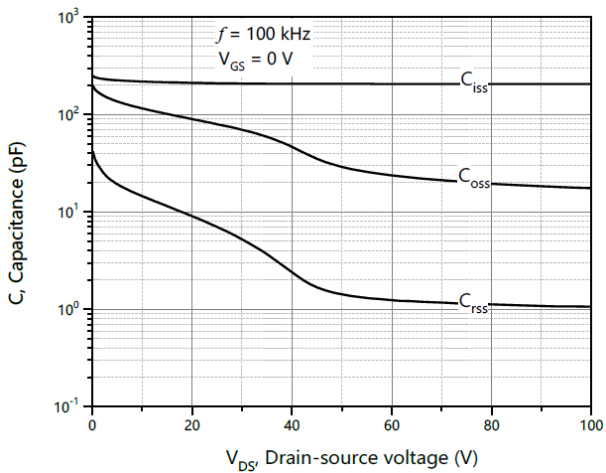


Figure3. Capacitance Characteristics

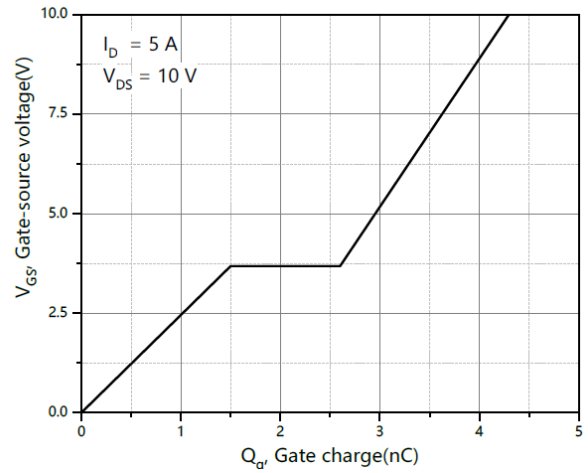


Figure4. Gate Charge

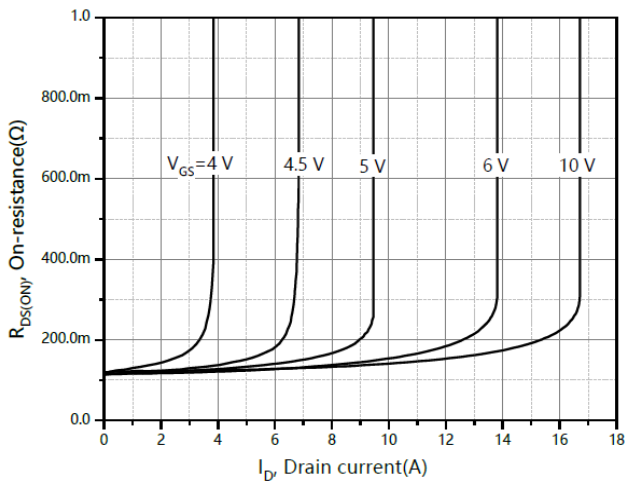


Figure5. : On-Resistance vs. Drain Current and Gate Voltage

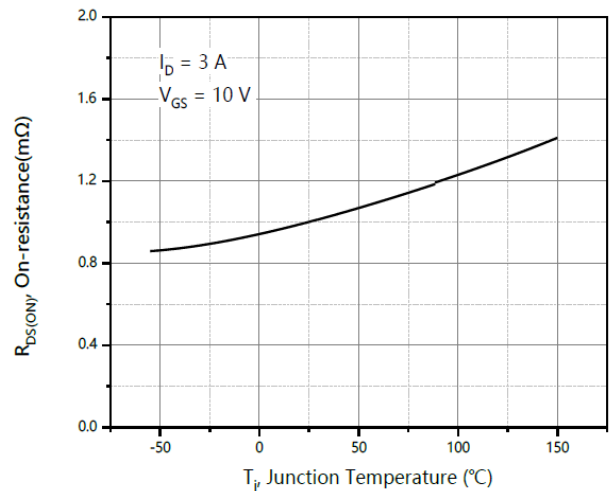
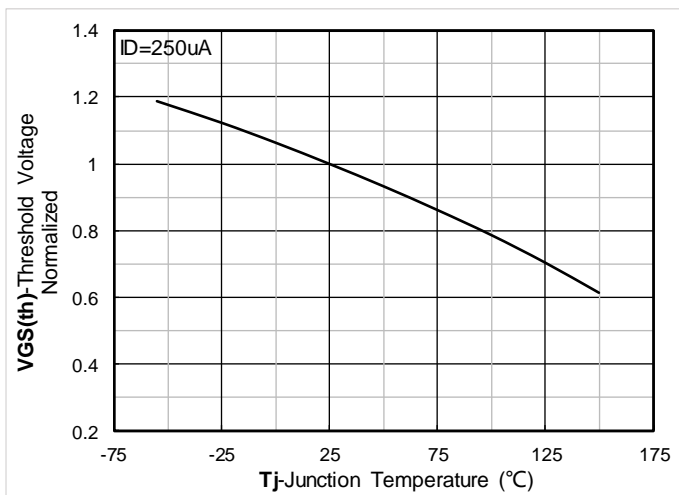
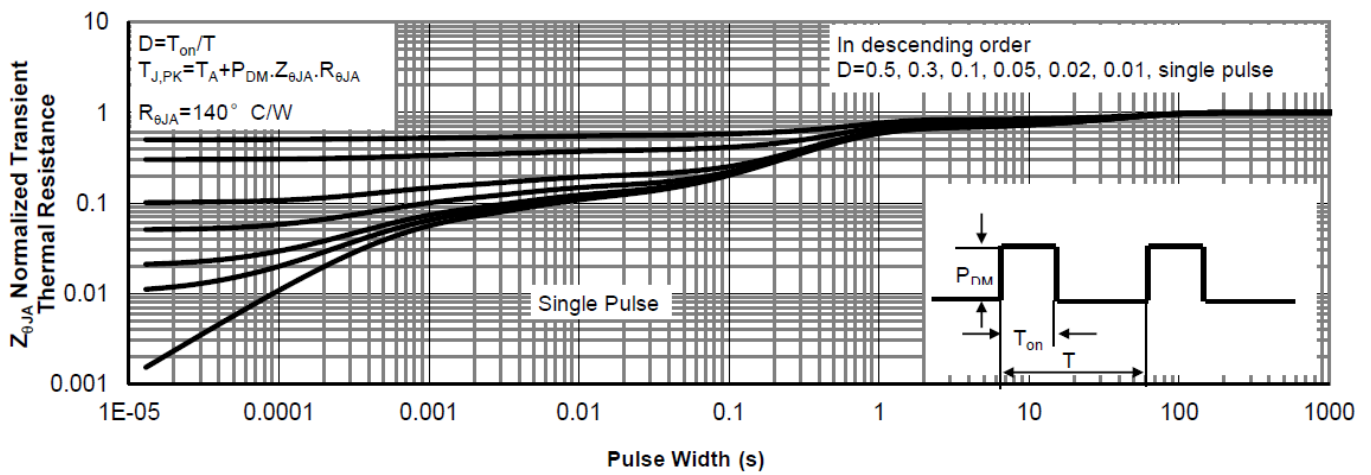
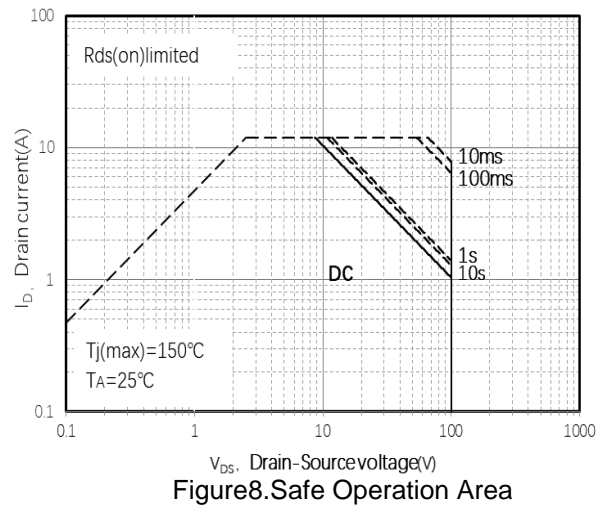
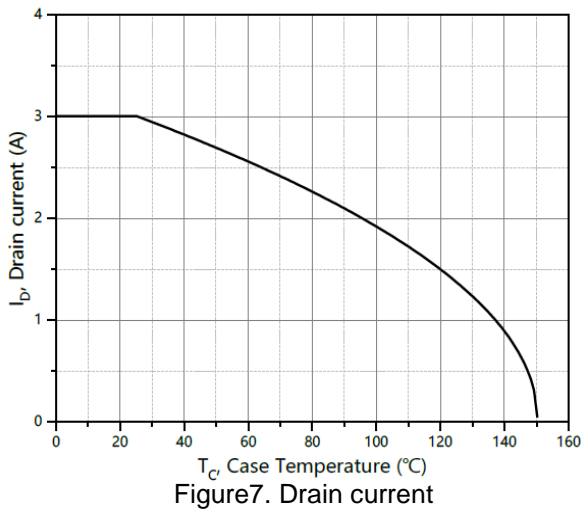


Figure6. Normalized On-Resistance



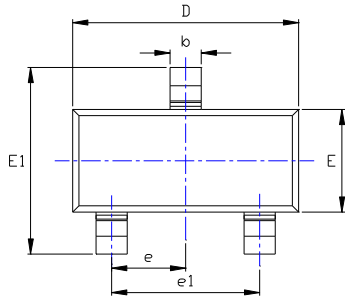
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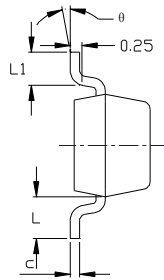


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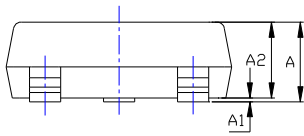
■ SOT-23 Package information



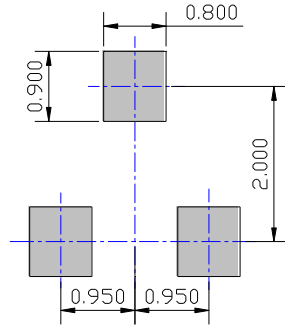
TOP VIEW



SIDE VIEW



SIDE VIEW



UNIT: mm

SUGGESTED SOLDER PAD LAYOUT

SYMBOL	DIMENSIONS			
	INCHES		Millimeter	
	MIN.	MAX.	MIN.	MAX.
A	0.035	0.045	0.900	1.150
A1	0.000	0.004	0.000	0.100
A2	0.035	0.041	0.900	1.050
b	0.012	0.020	0.300	0.500
c	0.004	0.008	0.100	0.200
D	0.110	0.118	2.800	3.000
E	0.047	0.055	1.200	1.400
E1	0.089	0.100	2.250	2.550
e	0.037 TYP		0.950 TYP	
e1	0.071	0.079	1.800	2.000
L	0.022 REF		0.550 REF	
L1	0.012	0.200	0.300	0.500
θ	0°	8°	0°	8°

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.



YJL03G10A

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