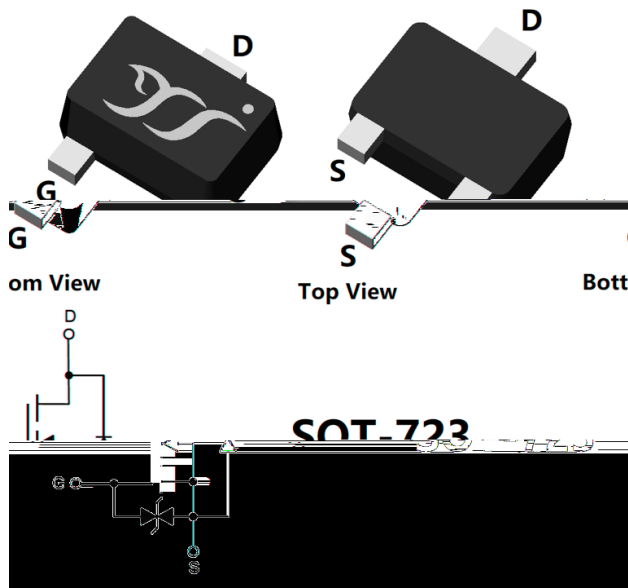


N-Channel Enhancement Mode Field Effect Transistor



Product Summary

- V_{DS} 20 V
- I_D 0.5 A
- $R_{DS(ON)}$ (at $V_{GS}=4.5V$) < 300 mohm
- $R_{DS(ON)}$ (at $V_{GS}=2.5V$) < 400 mohm
- $R_{DS(ON)}$ (at $V_{GS}=1.8V$) < 700 mohm
- ESD Protected Up to 2.0KV (HBM)

General Description

- Trench Power LV MOSFET technology
- High Power and current handling capability

Applications

- PWM application
- Load switch

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

Parameter		Symbol	Limit	Unit
Drain-source Voltage		V_{DS}	20	V
Gate-source Voltage		V_{GS}	± 12	V
Drain Current	$T_A=25^\circ C$	I_D	0.5	A
	$T_A=100^\circ C$		0.3	
Pulsed Drain Current ^A		I_{DM}	4	A
Total Power Dissipation ^B	$T_A=25^\circ C$	P_D	0.25	W
	$T_A=100^\circ C$		0.1	
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 ^C	Steady-State	$R_{\theta JA}$	420	500	$^\circ C/W$

■ Ordering Information (Example)

PREFERRED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
YJL3134KAT	F2	4A	8000	80000	320000	7" reel



YJL3134KAT

■ 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
		V _{DS} =20V, V _{GS} =0V, T _J =150	-	-	100	
Gate-Body Leakage Current	I _{GSS}	V _{GS} = ±10V, V _{DS} =0V	-	2	±10	uA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D =250μA	0.35	0.75	1.1	V
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =4.5V, I _D =0.5A	-	200	300	mΩ
		V _{GS} =2.5V, I _D =0.4A	-	290	400	
		V _{GS} =1.8V, I _D =0.2A	-	480	700	
Diode Forward Voltage	V _{SD}	I _S =0.5A, V _{GS} =0V	-	0.9	1.2	V
Gate resistance	R _G	f=1MHz, Open drain	-	50	-	Ω
Maximum Body-Diode Continuous Current	I _S		-	-	0.5	A
Dynamic Parameters						
Input Capacitance	C _{iss}	V _{DS} =10V, V _{GS} =0V, f=1MHz	-	56	-	pF
Output Capacitance	C _{OSS}		-	20	-	
Reverse Transfer Capacitance	C _{rss}		-	2.5	-	
Switching Parameters						
Total Gate Charge	Q _g	V _{GS} =4.5V, V _{DS} =10V, I _D =0.5A	-	1	-	nC
Gate-Source Charge	Q _{gs}		-	0.28	-	
Gate-Drain Charge	Q _{gd}		-	0.22	-	
Reverse Recovery Charge	Q _{rr}	I _F =0.5A, di/dt=20A/us	-	0.4	-	nC
Reverse Recovery Time	t _{rr}		-	14.4	-	ns
Turn-on Delay Time	t _{D(on)}	V _{GS} =4.5V, V _{DD} =10V, I _D =0.5A R _{GEN} =10Ω	-	2	-	nS
Turn-on Rise Time	t _r		-	18.8	-	
Turn-off Delay Time	t _{D(off)}		-	10	-	
Turn-off fall Time	t _f		-	23	-	

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

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

C. The value of R_{θJA} is measured with the device mounted on the minimum recommend pad size, in the still air environment with T_A =25 . The maximum allowed junction temperature of 150 . The value in any given application depends on the user's specific board design.



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Typical Electrical and Thermal Characteristics Diagrams

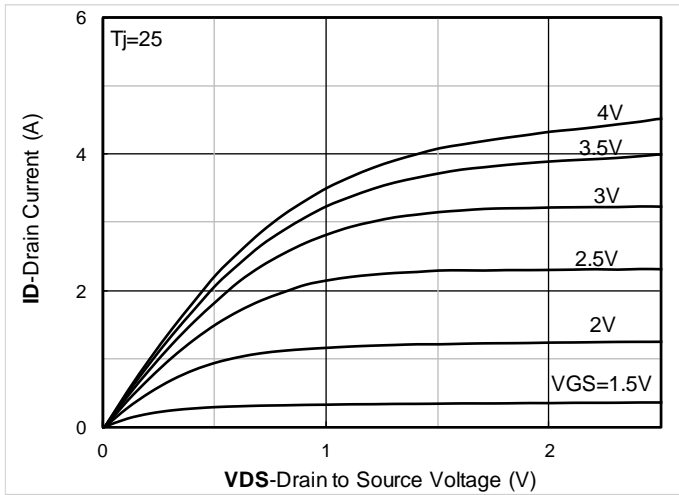


Figure1. Output Characteristics

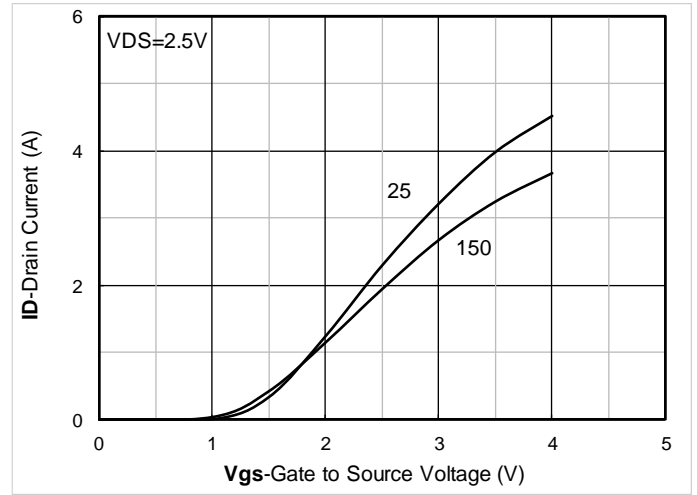


Figure2. Transfer Characteristics

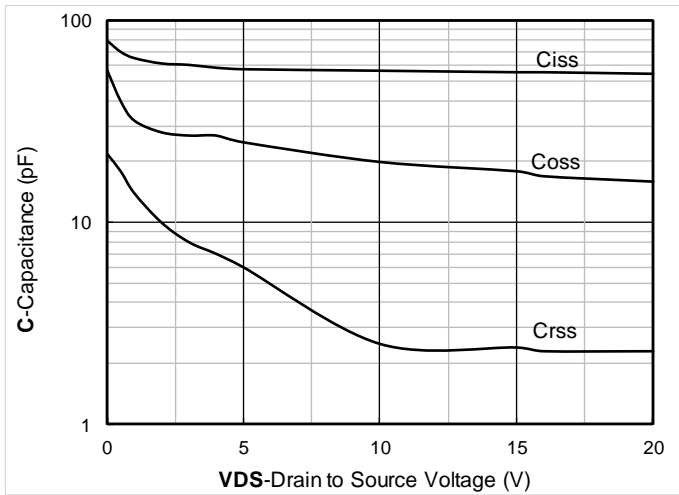


Figure3. Capacitance Characteristics

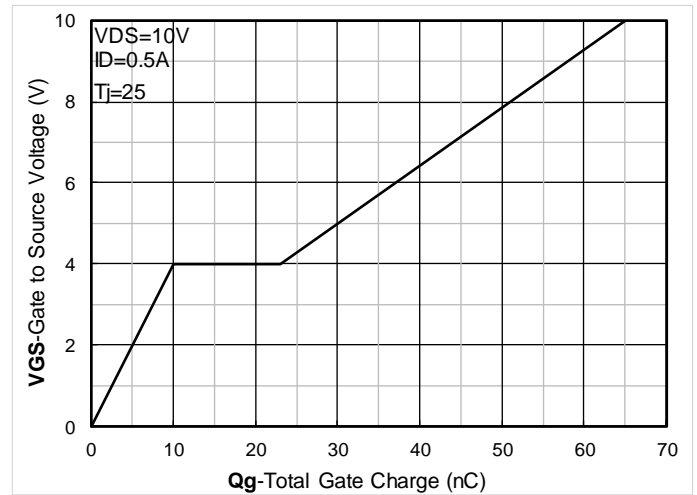


Figure4. Gate Charge

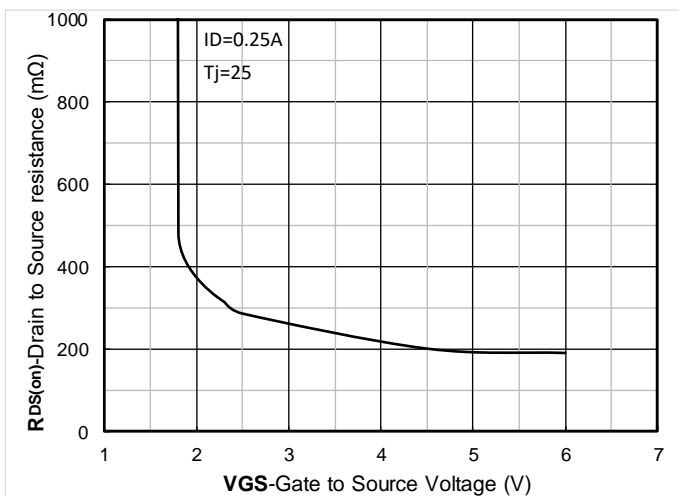


Figure5. On-Resistance vs Gate to Source Voltage

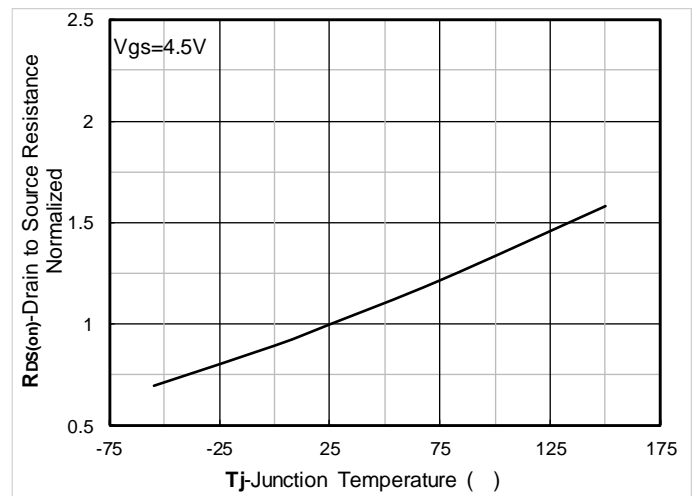


Figure6. Normalized On-Resistance



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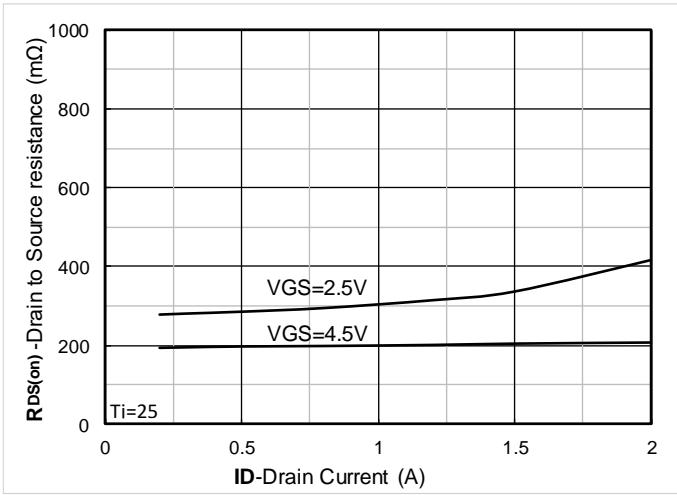


Figure7. $R_{DS(on)}$ VS Drain Current

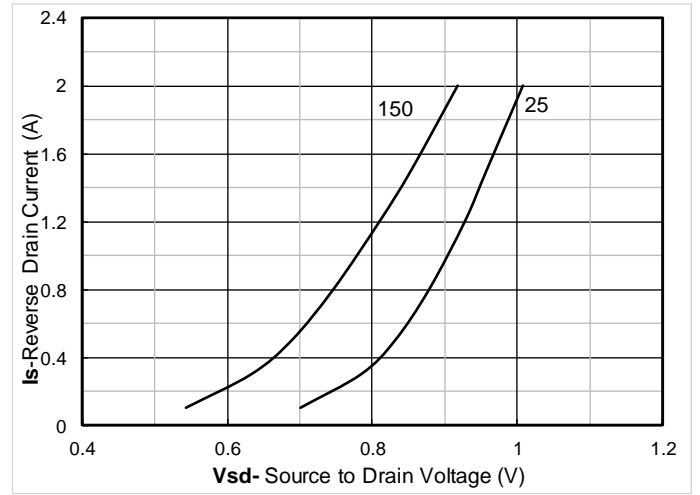


Figure8. Forward characteristics of reverse diode

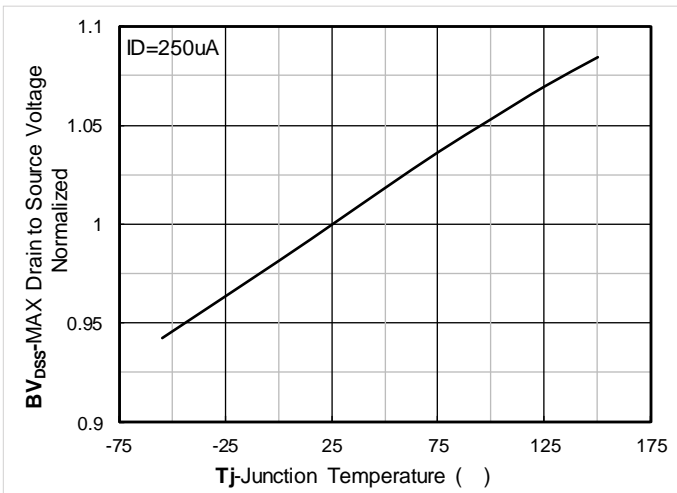


Figure9. Normalized breakdown voltage

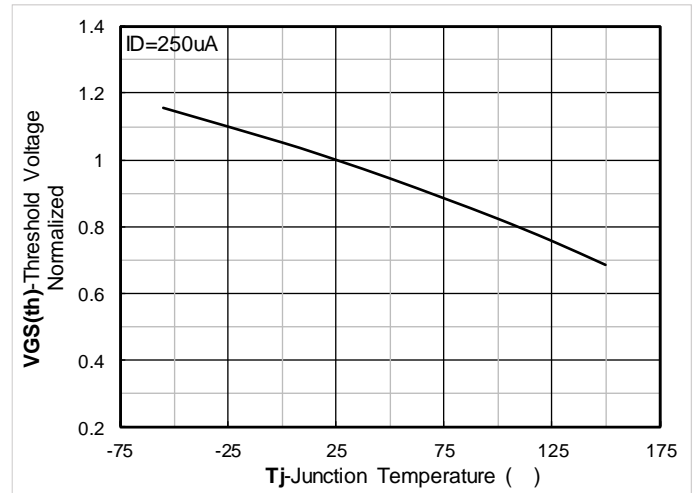


Figure10. Normalized Threshold voltage

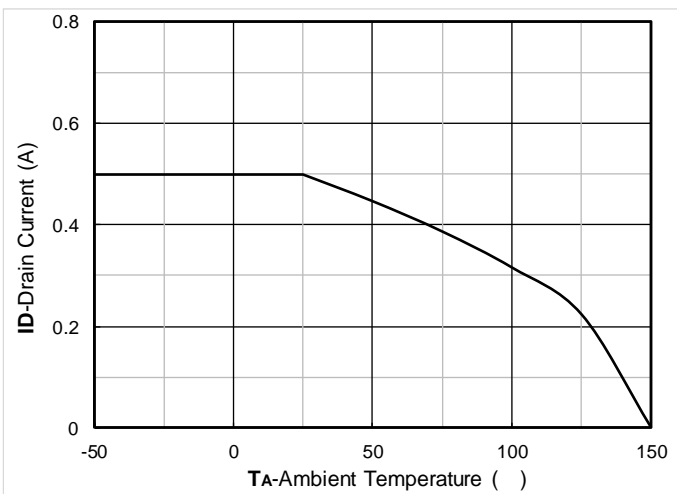


Figure11. Current dissipation

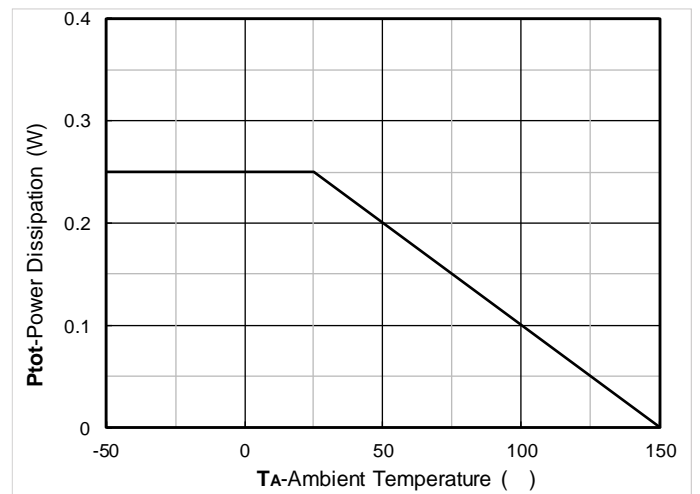


Figure12. Power dissipation



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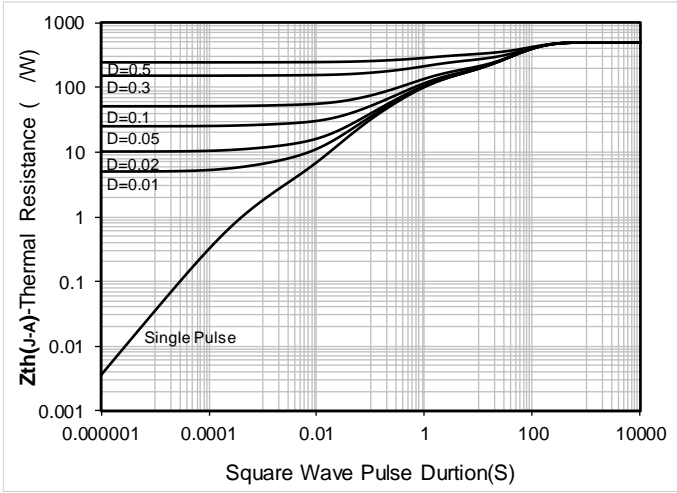


Figure 13. Maximum Transient Thermal Impedance

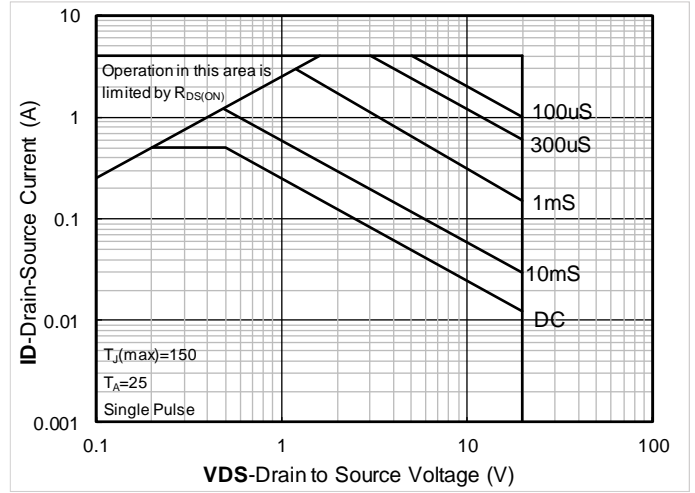
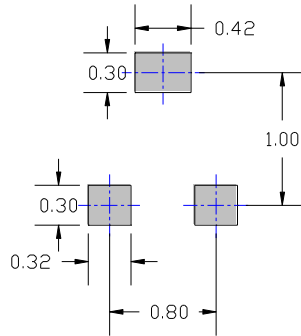
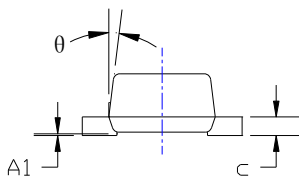
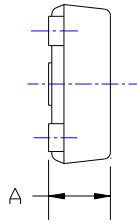
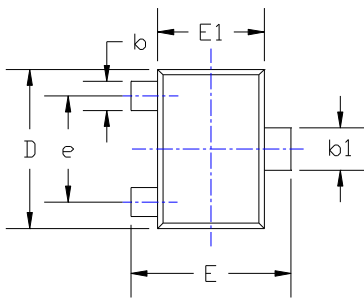


Figure 14. Safe Operation Area



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■ SOT-723 Package information



SYMBOL	DIMENSIONS			
	INCHES		Millimeter	
	MIN.	MAX.	MIN.	MAX.
A	0.017	0.022	0.430	0.550
A1	0.000	0.002	0.000	0.050
b	0.007	0.011	0.170	0.270
b1	0.011	0.015	0.270	0.370
c	0.003	0.008	0.080	0.200
D	0.045	0.049	1.150	1.250
E	0.045	0.049	1.150	1.250
E1	0.030	0.033	0.750	0.850
e	0.031TYP.		0.800TYP.	
θ	7°REF.		7°REF.	

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.



YJL3134KAT

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