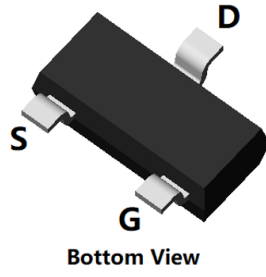
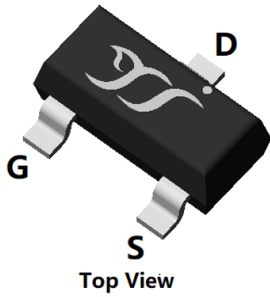
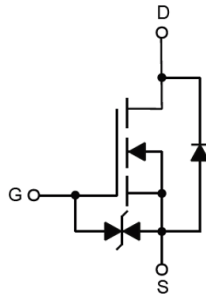


N-Channel Enhancement Mode Field Effect Transistor



SOT-23



Product Summary

- V_{DS} 30V
- I_D 1.44A
- $R_{DS(ON)}$ (at $V_{GS}=4.5V$) <240m Ω
- $R_{DS(ON)}$ (at $V_{GS}=2.5V$) <300m Ω
- ESD Protected Up to 2KV (HBM)

General Description

- High density cell design for Low RDS(ON)
- High Speed switching
- Moisture Sensitivity Level 1
- Epoxy Meets UL 94 V-0 Flammability Rating
- Halogen Free

Applications

- PWM applications
- Power management
- Load switch

Limiting Values

Parameter	Conditions	Symbol	Min	Max	Unit	
Drain-source Voltage		V_{DS}	-	30	V	
Gate-source Voltage		V_{GS}	-10	10		
Continuous Drain Current (Note 1,2)	Steady-State	I_D	$T_A=25^\circ C, V_{GS}= 10V$	-	1.44	A
			$T_A=100^\circ C, V_{GS}= 10V$	-	0.91	
Pulsed Drain Current	$T_A=25^\circ C, t_p \leq 10\mu s$	I_{DM}	-	5.76		
Maximum Body-Diode Continuous Current	$T_A=25^\circ C$	I_S		0.9		
Total Power Dissipation (Note 1,2)	Steady-State	P_D	$T_A=25^\circ C$	-	0.87	W
			$T_A=100^\circ C$	-	0.35	
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 (Note 2)	$R_{\theta JA}$	-	143	$^\circ C/W$

Ordering Information (Example)

PREFERRED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
YJL240N03AK	F2	240N03	3000	30000	120000	7" reel



YJL240N03AK

■ Electrical Characteristics

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250μA, T _J =25°C	30	-	-	V
		V _{GS} =0V, I _D =1mA, T _J =25°C	30	-	-	
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =30V, V _{GS} =0V, T _J =25°C	-	-	1	μA
		V _{DS} =30V, V _{GS} =0V, T _J =150°C	-	-	100	
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±10V, V _{DS} =0V, T _J =25°C	-	-	±10	μA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA, T _J =25°C	0.45	0.75	1.0	V
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =4.5V, I _D =1.4A, T _J =25°C	-	200	240	mΩ
		V _{GS} =2.5V, I _D =1.2A, T _J =25°C	-	250	300	mΩ
Diode Forward Voltage	V _{SD}	I _S =1.4A, V _{GS} =0V, T _J =25°C	-	0.9	1.2	V
Gate Resistance	R _G	f=1MHz, T _J =25°C	-	4	-	Ω
Dynamic Parameters						
Input Capacitance	C _{iss}	V _{DS} =15V, V _{GS} =0V, f=1MHz, T _J =25°C	-	56.5	-	pF
Output Capacitance	C _{oss}		-	9.6	-	
Reverse Transfer Capacitance	C _{riss}		-	5.1	-	
Switching Parameters						
Total Gate Charge	Q _g	V _{GS} =4.5V, V _{DS} =15V, I _D =1.4A, T _J =25°C	-	0.9	-	nC
Gate-Source Charge	Q _{gs}		-	0.3	-	
Gate-Drain Charge	Q _{gd}		-	0.3	-	
Reverse Recovery Charge	Q _{rr}	I _F =1.4A, di/dt=100A/μs, V _{GS} =0V, V _R =15V, T _J =25°C	-	5	-	nC
Reverse Recovery Time	t _{rr}		-	16	-	ns
Turn-on Delay Time	t _{D(on)}	V _{GS} =4.5V, V _{DS} =15V, I _D =1.4A, R _{GEN} =3Ω, T _J =25°C	-	3.7	-	ns
Turn-on Rise Time	t _r		-	5.9	-	
Turn-off Delay Time	t _{D(off)}		-	10.4	-	
Turn-off Fall Time	t _f		-	4.1	-	

Note:

- The entire application environment impacts the thermal resistance values shown, they are not constants and are only valid for the particular conditions noted.
- The value of R_{θJA} is measured with the device mounted on the 40mm*40mm*1.1mm single layer FR-4 PCB board with 1 in² pad of 2oz. Copper, in the still air environment with T_A=25°C. The maximum allowed junction temperature of 150°C. The value in any given application depends on the user's specific board design.



YJL240N03AK

Typical Electrical and Thermal Characteristics Diagrams

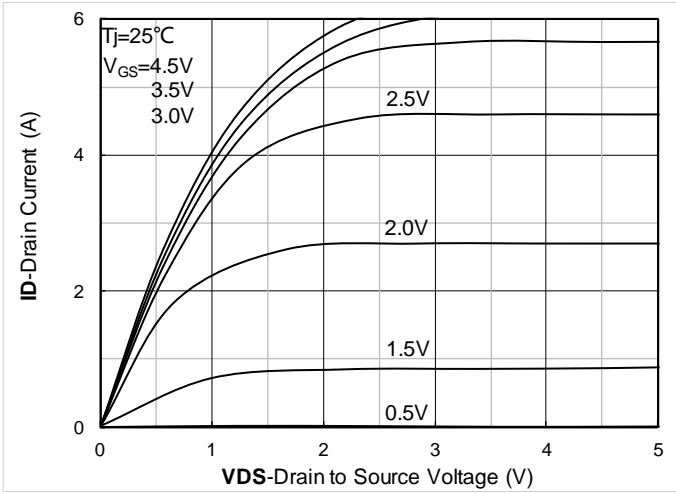


Figure 1. Output Characteristics; typical values

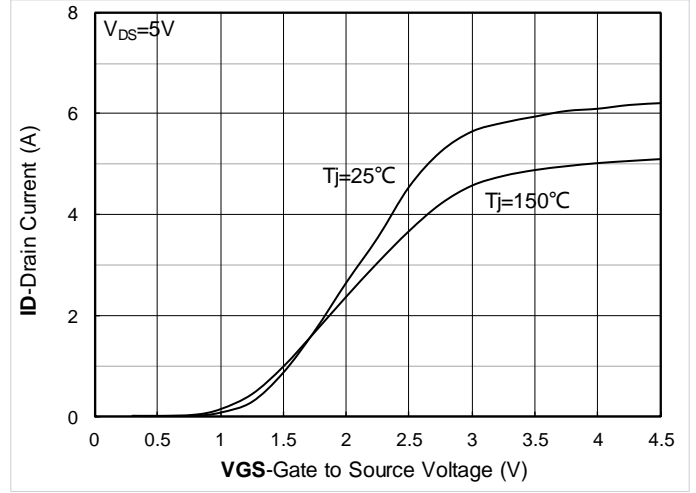


Figure 2. Transfer Characteristics; typical values

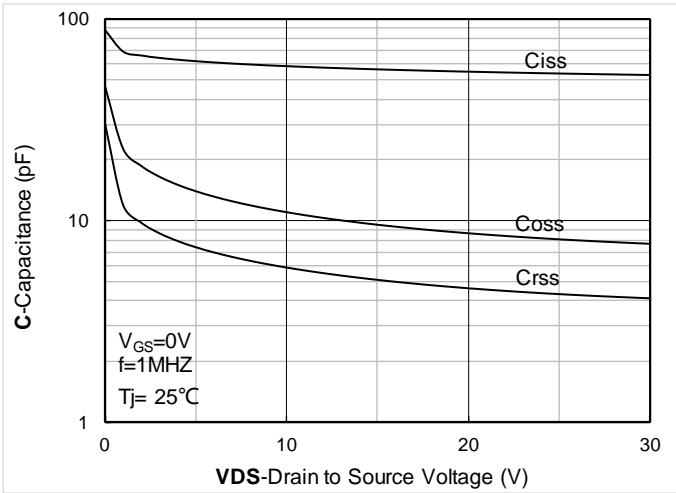


Figure 3. Capacitance Characteristics; typical values

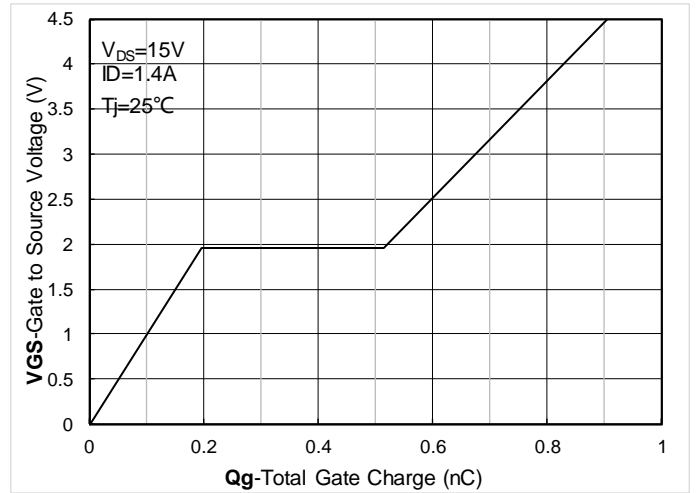


Figure 4. Gate Charge; typical values

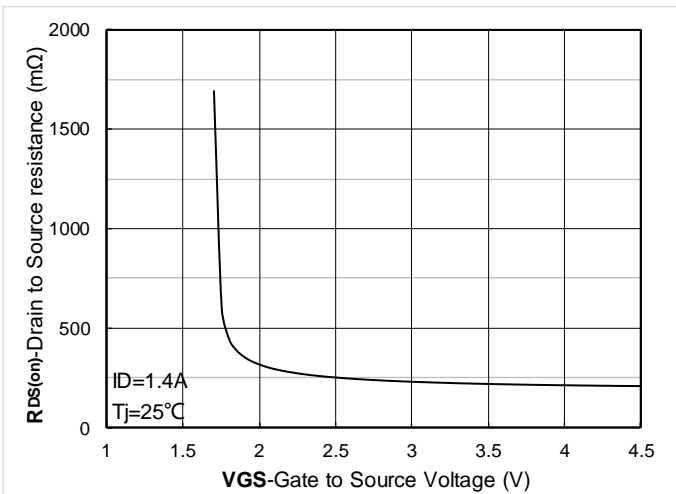


Figure 5. On-Resistance vs. Gate to Source Voltage; typical values

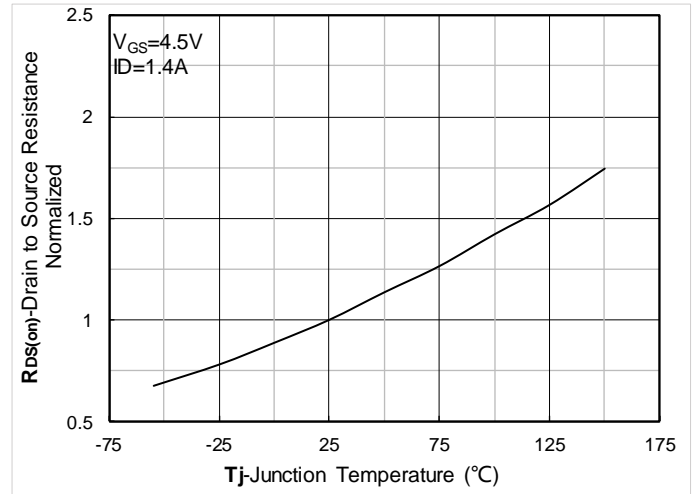


Figure 6. Normalized On-Resistance



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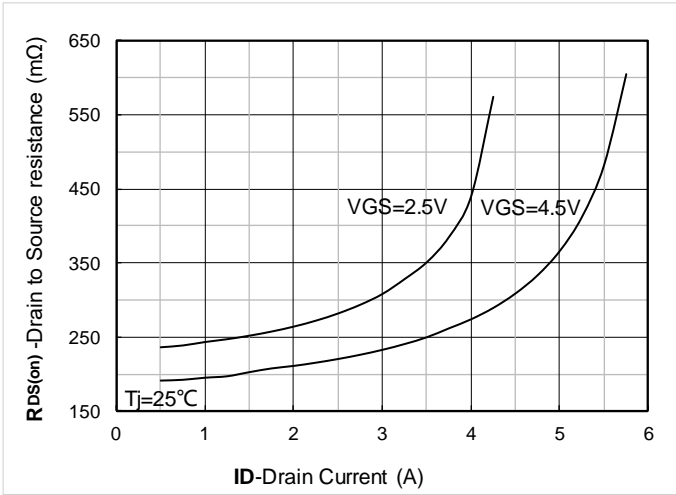


Figure 7. RDS(on) vs. Drain Current; typical values

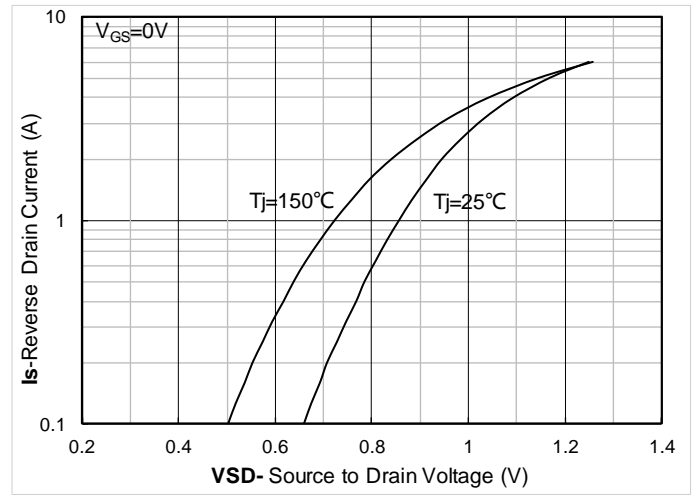


Figure 8. Forward characteristics of reverse diode; typical values

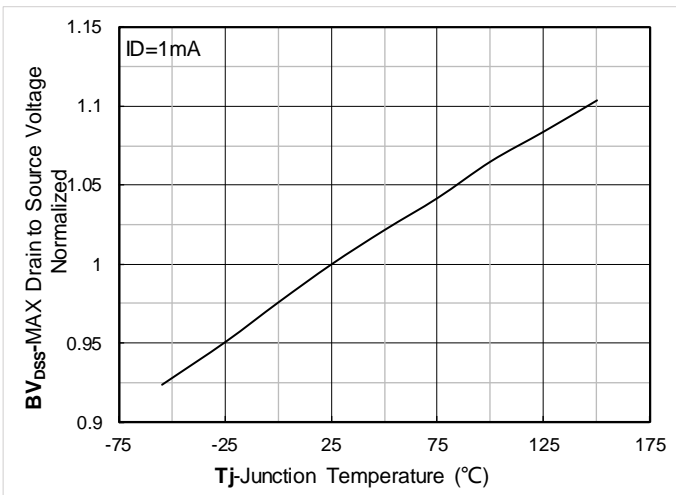


Figure 9. Normalized breakdown voltage

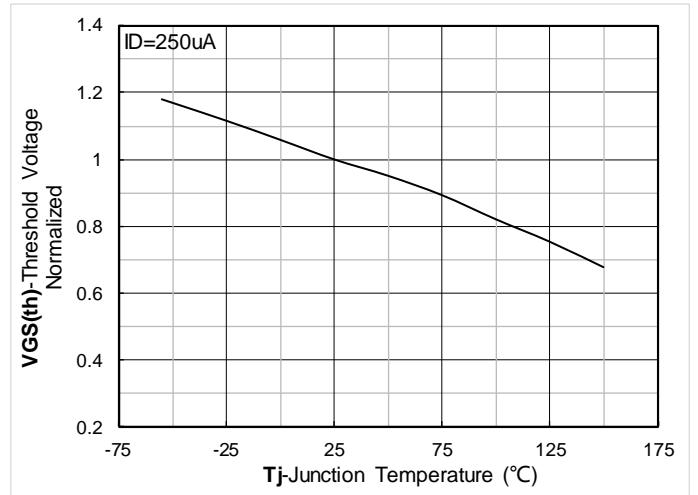


Figure 10. Normalized Threshold voltage

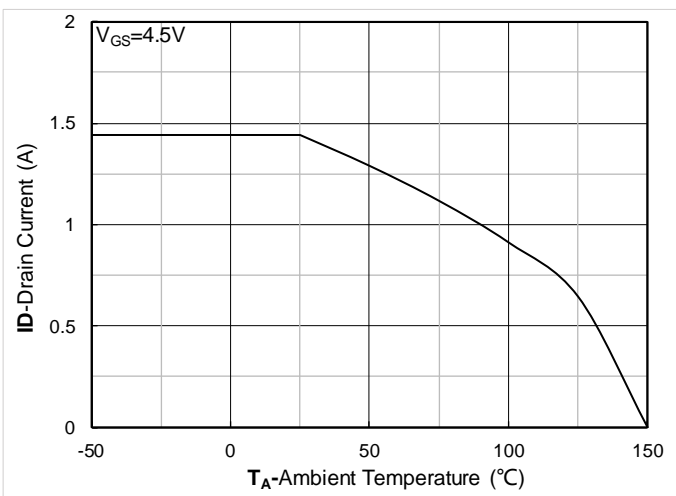


Figure 11. Current dissipation

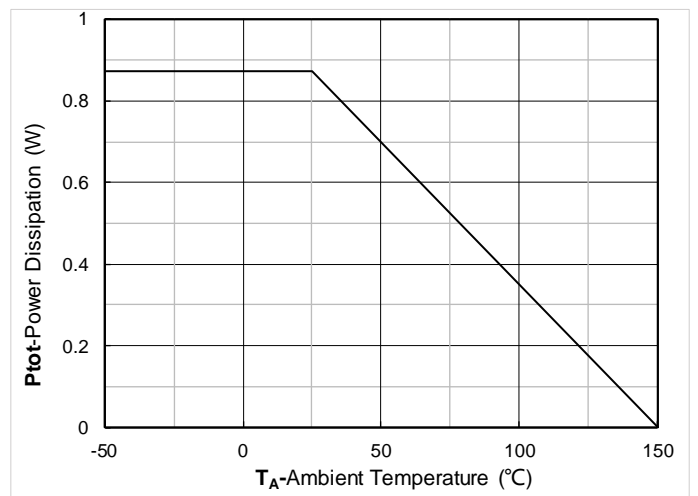


Figure 12. Power dissipation



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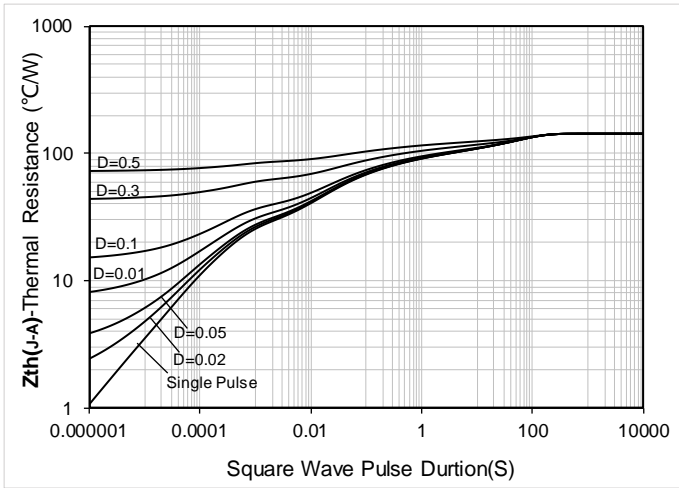


Figure 13. Maximum Transient Thermal Impedance

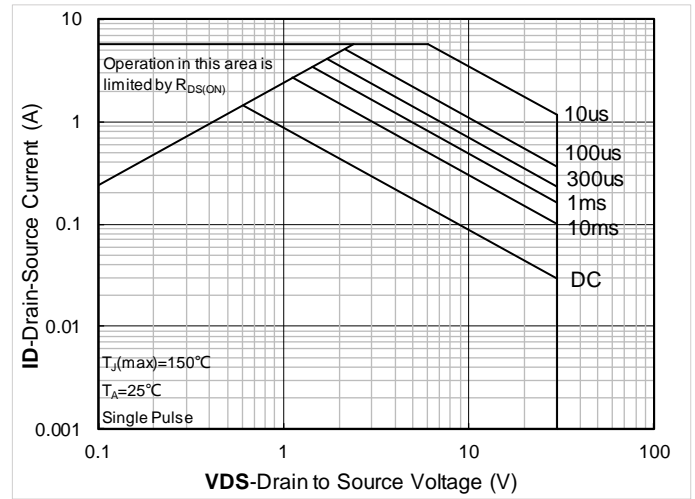


Figure 14. Safe Operation Area

■ Test Circuits & Waveforms

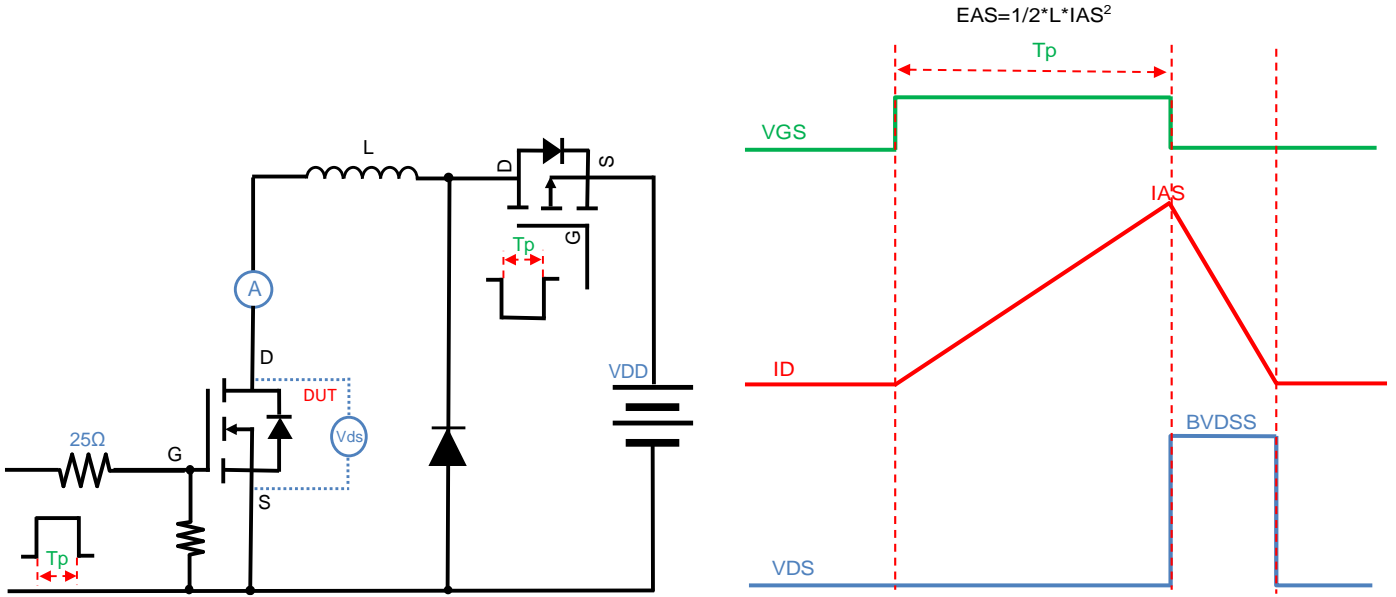


Figure A. Unclamped Inductive Switching (UIS) Test Circuit & Waveform

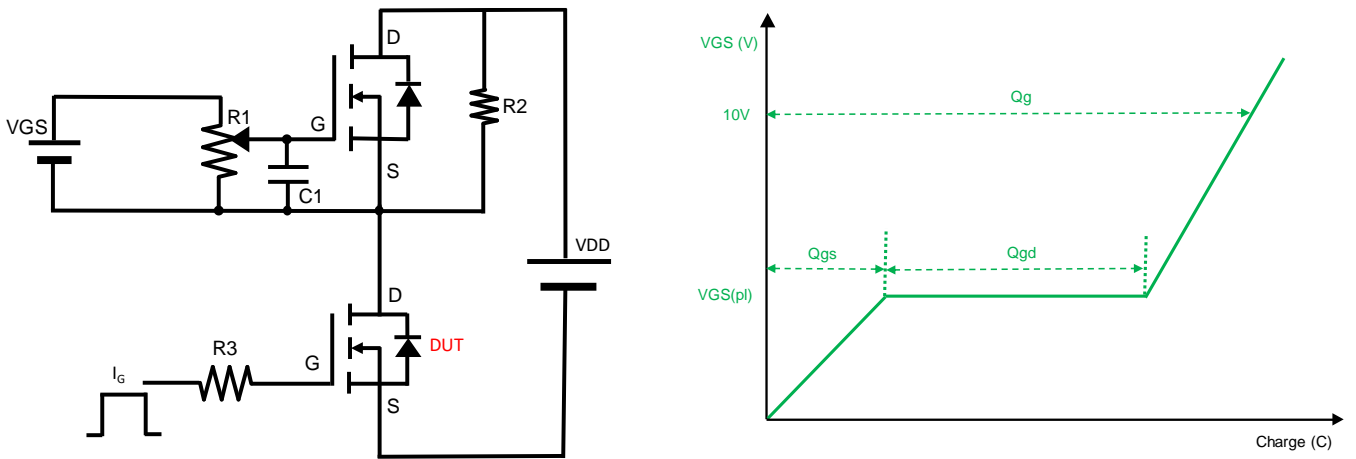


Figure B. Gate Charge Test Circuit & Waveform

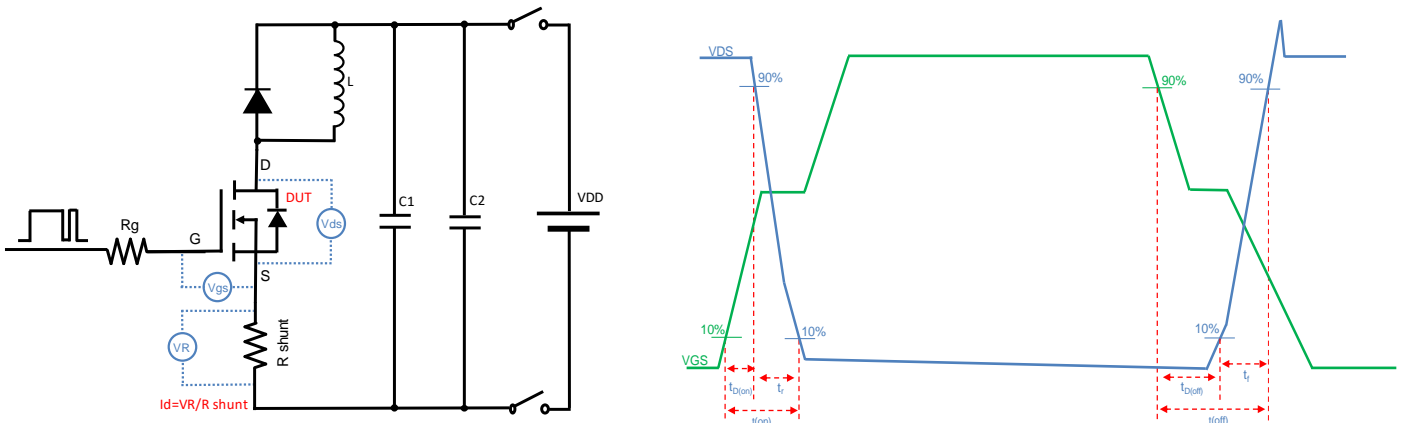


Figure C. Resistive Switching Test Circuit & Waveform

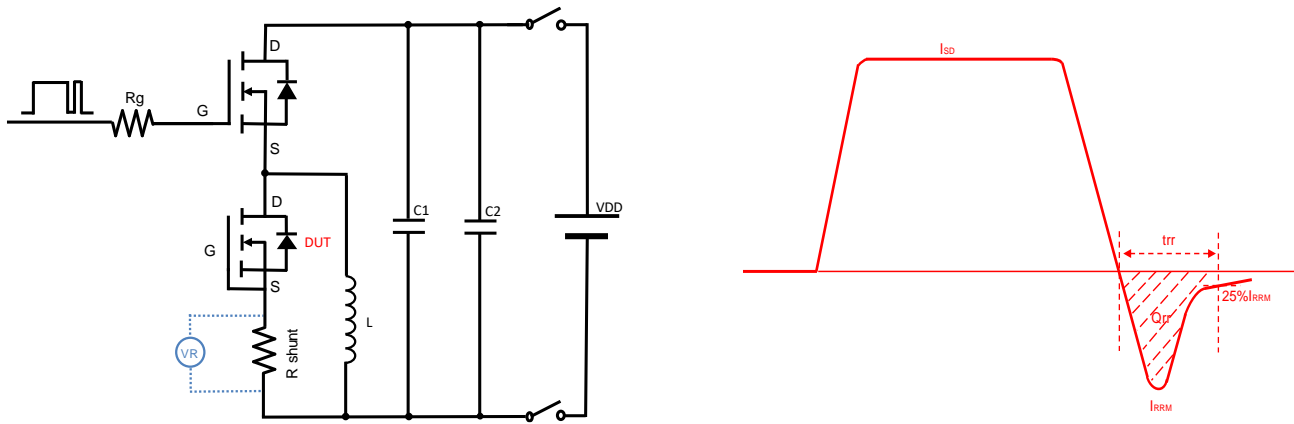
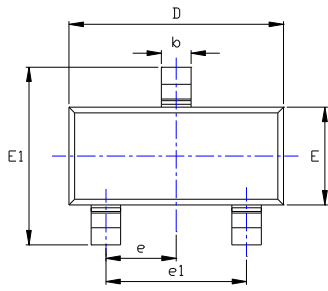


Figure D. Diode Recovery Test Circuit & Waveform

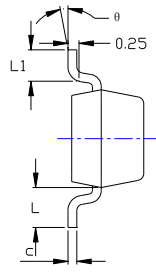


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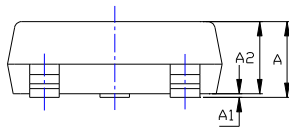
■ SOT-23 Package information



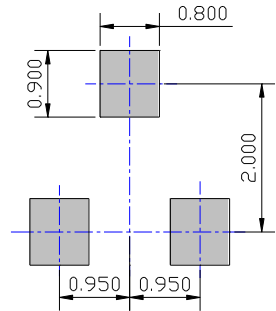
TOP VIEW



SIDE VIEW



SIDE VIEW



UNIT: mm

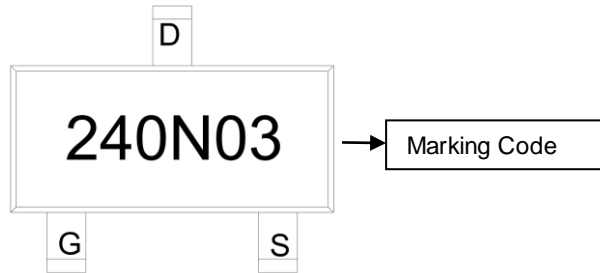
SUGGESTED SOLDER PAD LAYOUT

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	0.020	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.



■ Marking Information



Note:

1. All marking is at middle of the product body
2. All marking is in laser printing
3. 240N03 is Marking Code
4. Body color: Black



YJL240N03AK

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