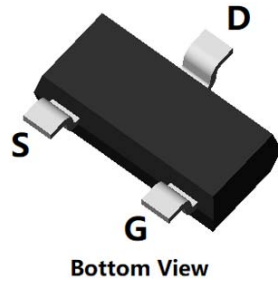
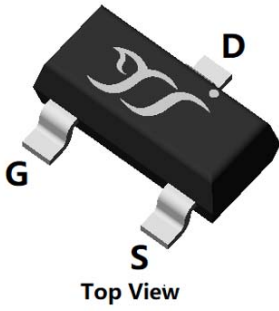
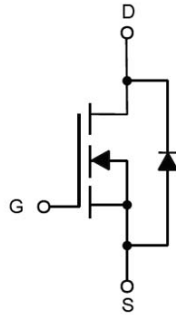


N-Channel Enhancement Mode Field Effect Transistor



SOT-23



Product Summary

• V_{DS}	60V
• I_D	3.0A
• $R_{DS(ON)}$ (at $V_{GS}=10V$)	< 100mohm
• $R_{DS(ON)}$ (at $V_{GS}=4.5V$)	< 120mohm

General Description

- Trench Power MV MOSFET technology
- Excellent package for heat dissipation
- High density cell design for low $R_{DS(ON)}$
- Part no. with suffix "Q" means AEC-Q101 qualified

Applications

- DC-DC Converters
- Power management functions

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

Parameter		Symbol	Limit	Unit
Drain-source Voltage		V_{DS}	60	V
Gate-source Voltage		V_{GS}	± 20	V
Drain Current	$T_A=25^\circ\text{C}$	I_D	3	A
	$T_A=70^\circ\text{C}$		2.4	
Pulsed Drain Current ^A		I_{DM}	12	A
Total Power Dissipation	$T_A=25^\circ\text{C}$	P_D	1.2	W
	$T_A=70^\circ\text{C}$		0.8	W
Thermal Resistance Junction-to-Ambient ^B		$R_{\theta JA}$	104	$^\circ\text{C}/\text{W}$
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
YJL03N06AQ	F2	S10.	3000	30000	120000	7" reel



YJL03N06AQ

■ 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	60			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =60V, V _{GS} =0V			1	μA
Gate-Body Leakage Current	I _{GSS1}	V _{GS} =±20V, V _{DS} =0V			±100	nA
	I _{GSS2}	V _{GS} =±10V, V _{DS} =0V			±50	
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	0.9	1.3	2.0	V
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =10V, I _D =3A		86	100	mΩ
		V _{GS} =4.5V, I _D =2A		92	120	
Diode Forward Voltage	V _{SD}	I _S =3A, V _{GS} =0V			1.2	V
Dynamic Parameters						
Input Capacitance	C _{iss}	V _{DS} =10V, V _{GS} =0V, f=1MHZ		409		pF
Output Capacitance	C _{oss}			50		
Reverse Transfer Capacitance	C _{rss}			41		
Switching Parameters						
Total Gate Charge	Q _g	V _{GS} =10V, V _{DS} =30V, I _D =3A		10.27		nC
Gate-Source Charge	Q _{gs}			1.65		
Gate-Drain Charge	Q _{gd}			2.11		
Reverse Recovery Chrage	Q _{rr}	I _F =3A, di/dt=100A/us		6.99		ns
Reverse Recovery Time	t _{rr}			32.6		
Turn-on Delay Time	t _{D(on)}	V _{GS} =10V, V _{DS} =30V, R _L =20Ω R _{GEN} =3Ω		3.6		ns
Turn-on Rise Time	t _r			17.6		
Turn-off Delay Time	t _{D(off)}			13		
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-case and case-to-ambient thermal resistance, where the case thermal reference is defined as the solder mounting surface of the drain pins. R_{θJC} 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

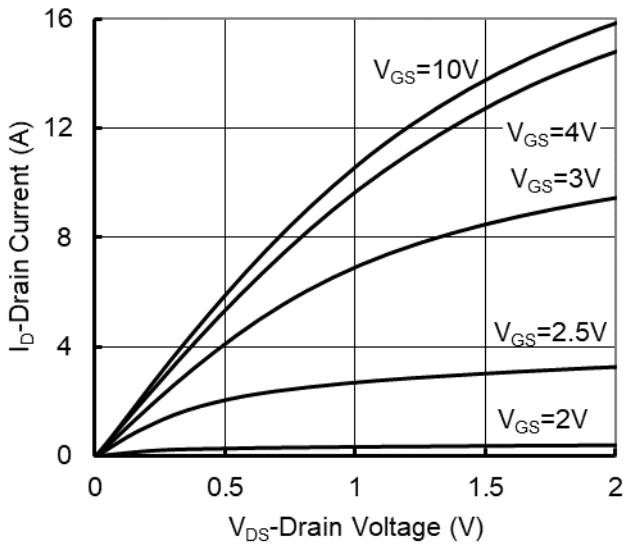


Figure1. Output Characteristics

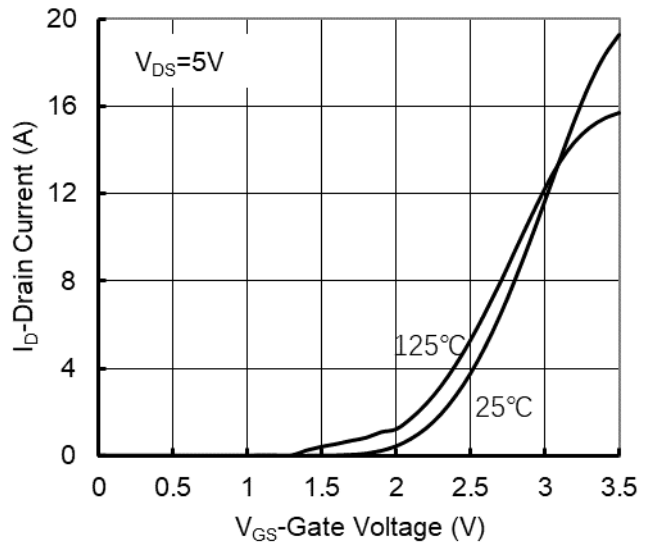


Figure2. Transfer Characteristics

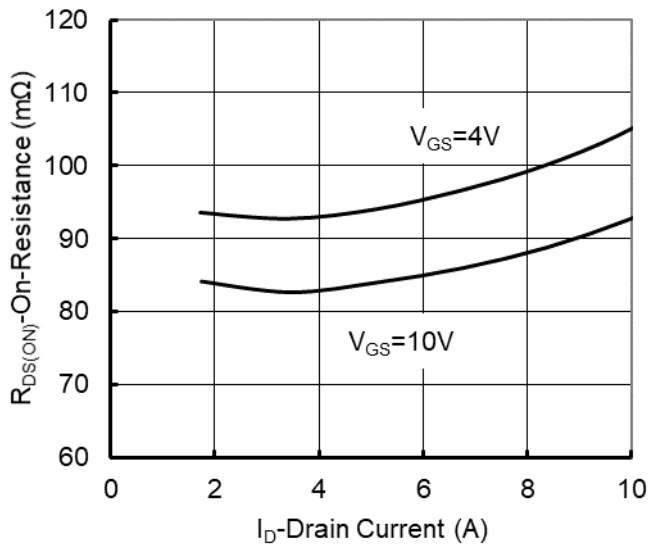


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

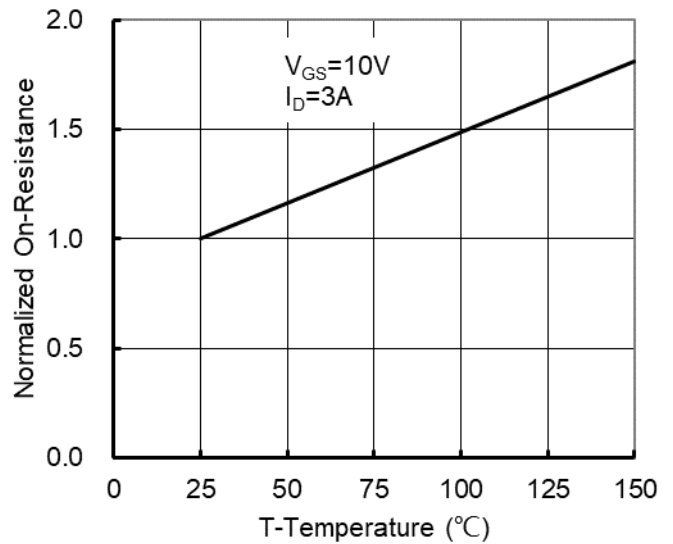


Figure 4: On-Resistance vs. Junction Temperature

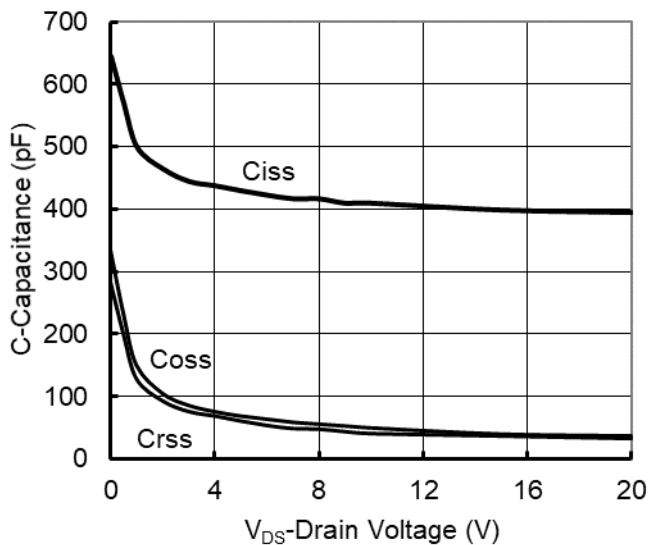


Figure5. Capacitance Characteristics

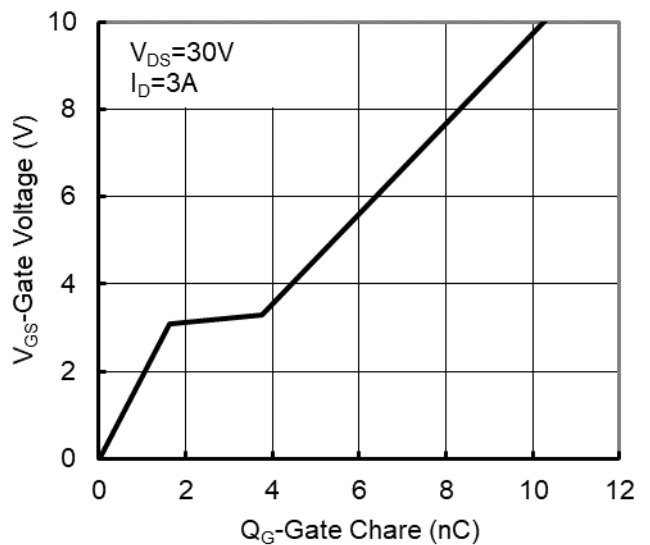


Figure6. Gate Charge



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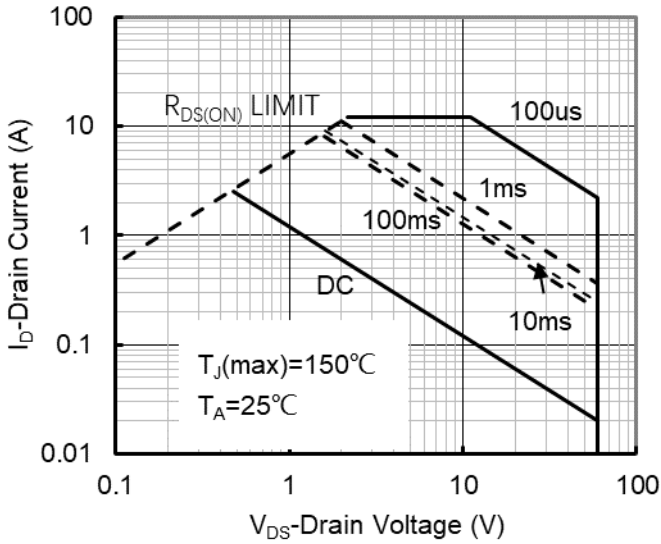


Figure7. Safe Operation Area

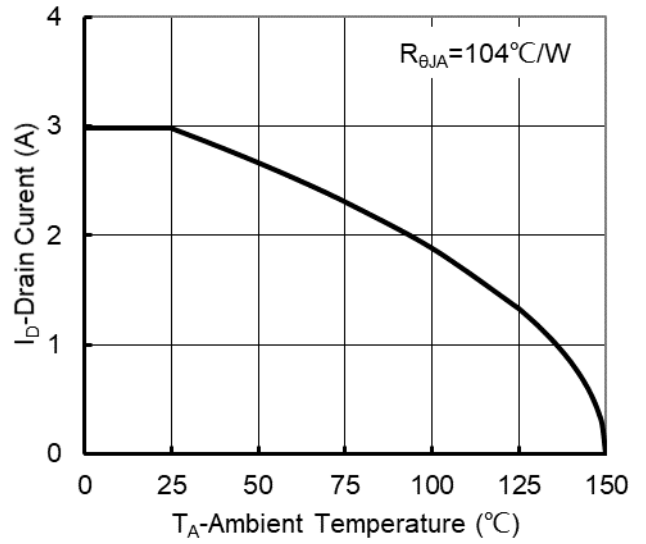


Figure8. Maximum Continuous Drain Current vs Ambient Temperature

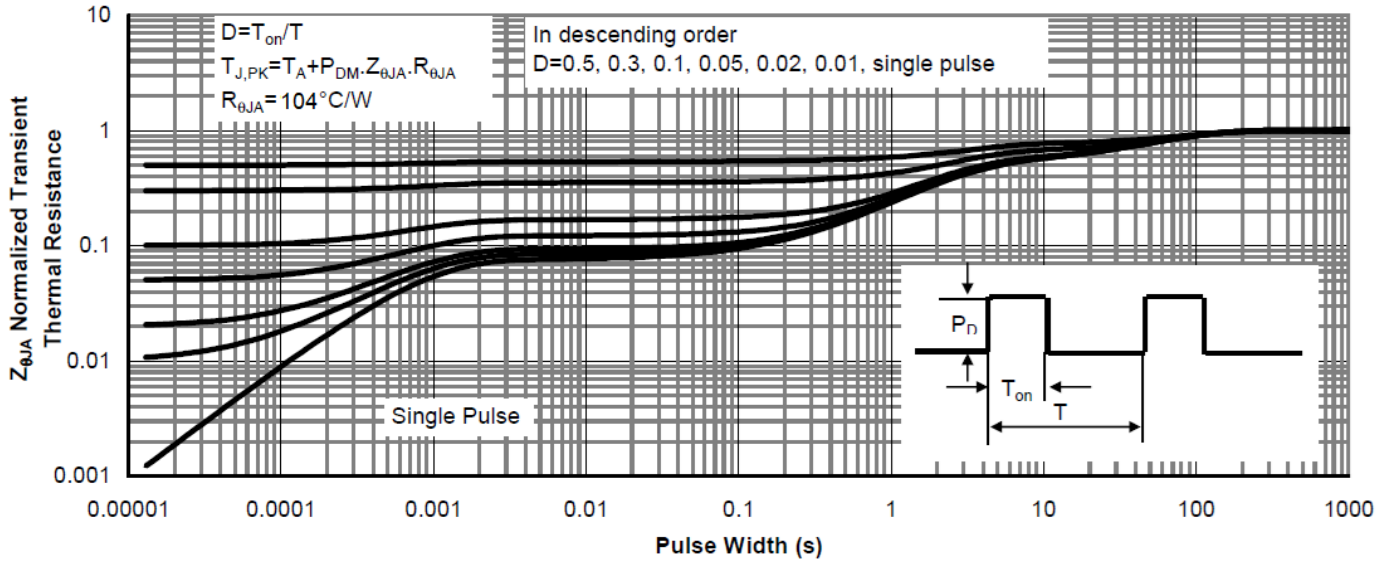
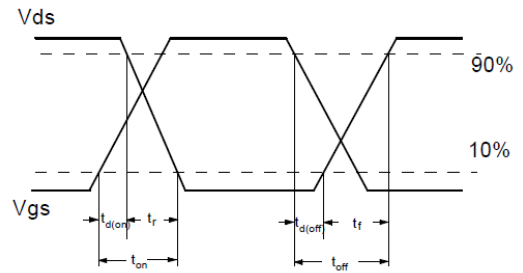
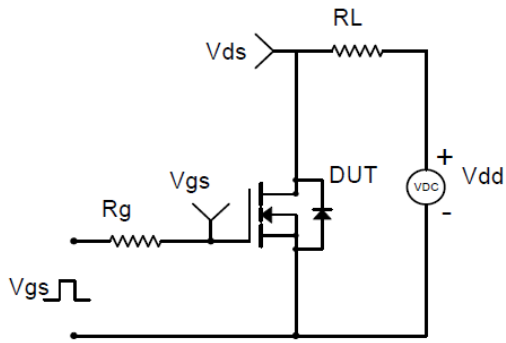
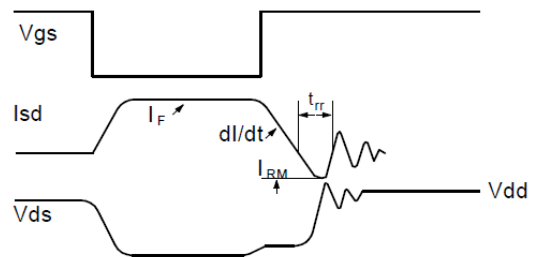
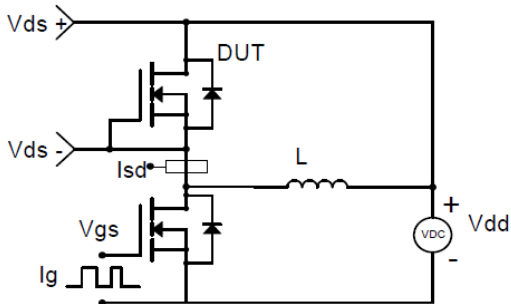


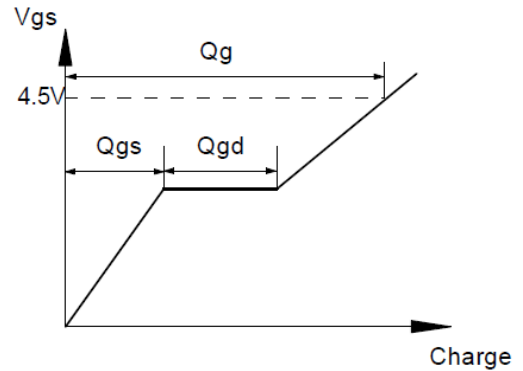
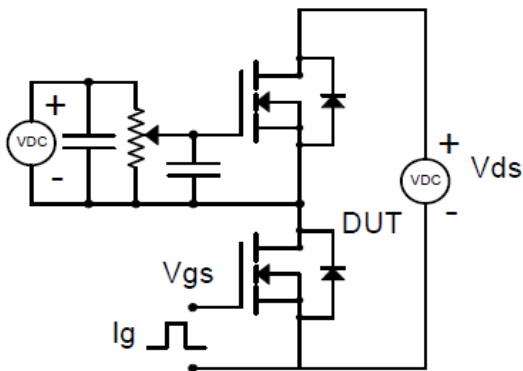
Figure9. Normalized Maximum Transient Thermal Impedance



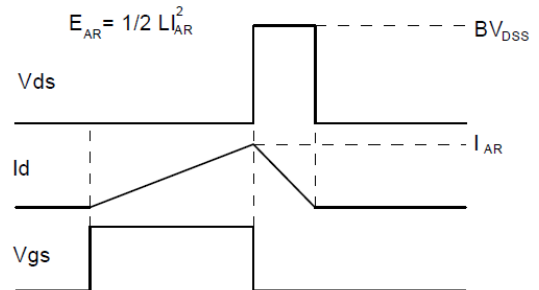
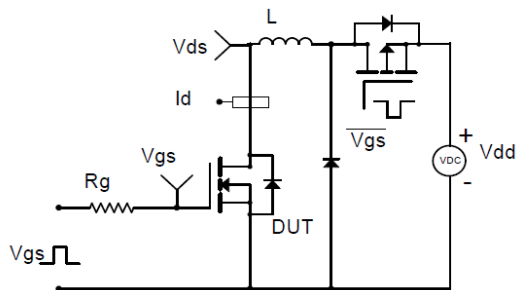
Resistive Switching Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



Gate Charge Test Circuit & Waveform

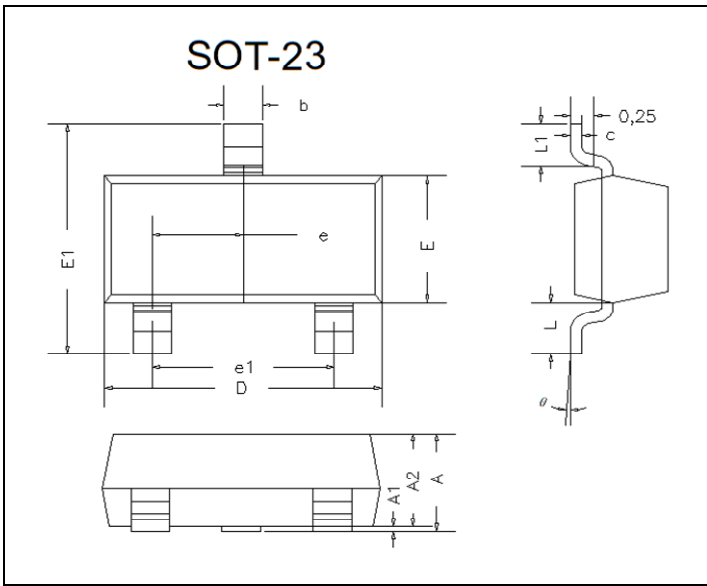


Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



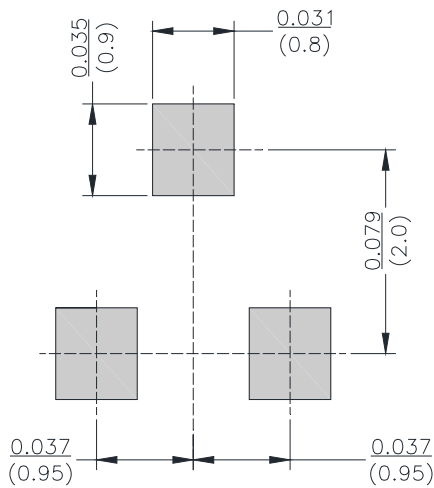
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■ SOT-23 Package information



DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.035	0.045	0.90	1.15	
A1	0.000	0.004	0.00	0.10	
A2	0.035	0.041	0.90	1.05	
b	0.012	0.020	0.30	0.50	
c	0.004	0.008	0.10	0.20	
D	0.110	0.118	2.80	3.00	
E	0.047	0.055	1.20	1.40	
E1	0.089	0.100	2.25	2.55	
e	0.370TYP		0.95TYP		
e1	0.071	0.079	1.80	2.00	
L	0.220REF		0.55REF		
L1	0.012	0.020	0.30	0.50	
θ	0°	8°	0°	8°	

■ SOT-23 Suggested Pad Layout





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