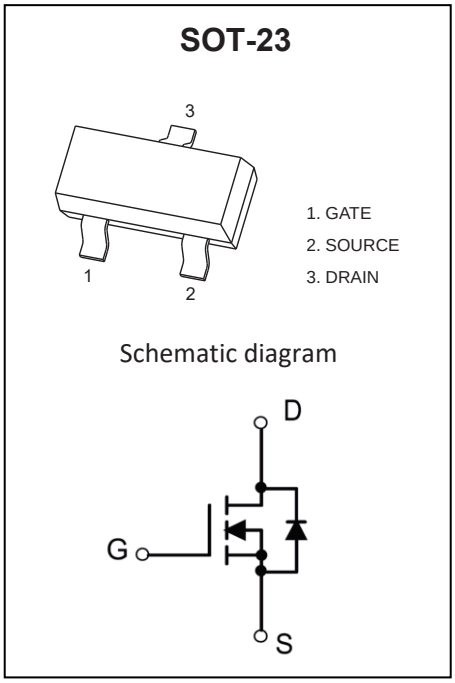
TKMN3402

30V N-Channel MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
30V	34mΩ@10V	4A
	37mΩ@4.5V	
	45mΩ@2.5V	



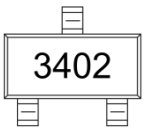
Feature

- TrenchFET Power MOSFET
- Excellent $R_{DS(on)}$ and Low Gate Charge

Application

- DC/DC Converter
- Load Switch for Portable Devices
- Battery Switch

MARKING:



ABSOLUTE MAXIMUM RATINGS (T_a=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	±12	V
Continuous Drain Current	I_D	4	A
Pulsed Drain Current(1)	I_{DM}	15	A
Power Dissipation	P_D	1.5	W
Thermal Resistance from Junction to Ambient(2)	$R_{\theta JA}$	83.3	℃/W
Junction Temperature	T_J	150	℃
Storage Temperature	T_{STG}	-55~ +150	℃

MOSFET ELECTRICAL CHARACTERISTICS(T_a=25℃ unless otherwise noted)

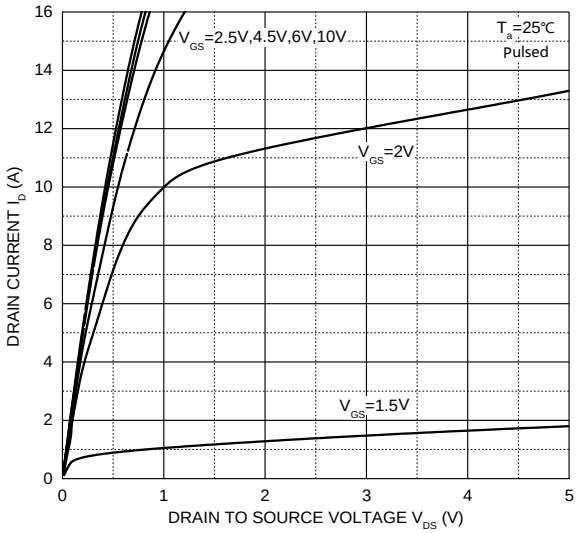
Parameter	Symbol	Test Condition	Min	Type	Max	Unit
STATIC CHARACTERISTICS						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D =250μA	30			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =30V,V_{GS} = 0V			1	μA
Gate-body leakage current	I_{GSS}	V_{GS} =±12V, V_{DS} = 0V			±100	nA
Gate threshold voltage(3)	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	0.5	0.95	1.5	V
Drain-source on-resistance(3)	$R_{DS(on)}$	V_{GS} =10V, I_D =4A		34	52	mΩ
		V_{GS} =4.5V, I_D =3A		37	65	
		V_{GS} =2.5V, I_D =2A		45	85	
Forward tranconductance(3)	g_{FS}	V_{DS} =5V, I_D =3.6A		13		S
DYNAMIC CHARACTERISTICS(4)						
Input Capacitance	C_{iss}	V_{DS} =15V,V_{GS} =0V,f=1MHz		389		pF
Output Capacitance	C_{oss}			54		
Reverse Transfer Capacitance	C_{rss}			40		
Gate resistance	R_g	V_{DS} =0V,V_{GS} =0V,f =1MHz		3.5		Ω
SWITCHING CHARACTERISTICS(4)						
Turn-on delay time	$t_{d(on)}$	V_{GS}=10V,V_{DS}=15V, R_L=3.75Ω,R_{GEN}=6Ω		3.5		ns
Turn-on rise time	t_r			1.2		
Turn-off delay time	$t_{d(off)}$			22		
Turn-off fall time	t_f			2.2		
Total gate charge	Q_g	V_{DS} =15V,V_{GS} =4.5V,I_D =4A		4.4		nC
Gate-source charge	Q_{gs}			0.7		
Gate-drain charge	Q_{gd}			1.3		
SOURCE-DRAIN DIODE CHARACTERISTICS						
Body Diode Voltage(3)	V_{SD}	I_S=1A, VGS = 0V			1	V
Continuous Source-Drain Diode Current	I_S	T_C=25℃			1.5	A
Body diode reverse recovery time	t.	I_F=4A,dI/dt=100A/μs		1.3		ns
Body diode reverse recovery charge	Qrr			6.2		nC

Notes:

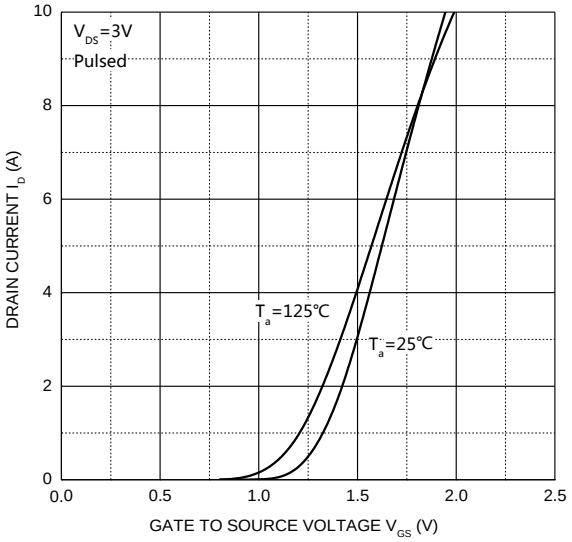
1. Repetitive rating : Pulse width limited by junction temperature.
2. Surface mounted on FR4 board , t≤10s.
3. Pulse Test : Pulse Width≤80μs, Duty Cycle≤0.5%.
4. Guaranteed by design, not subject to producting.

Typical Electrical and Thermal Characteristics

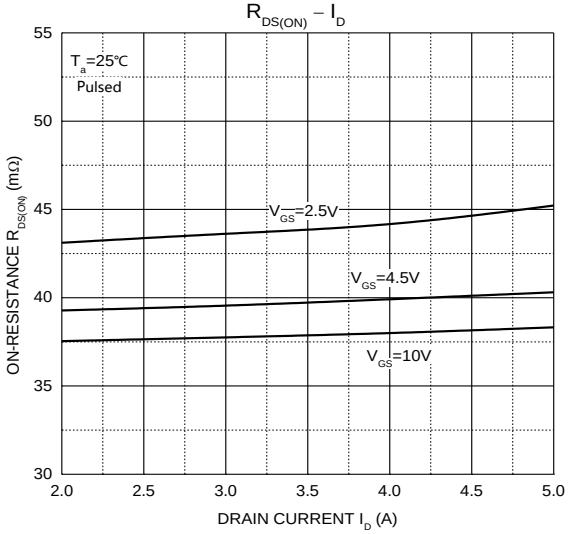
Output Characteristics



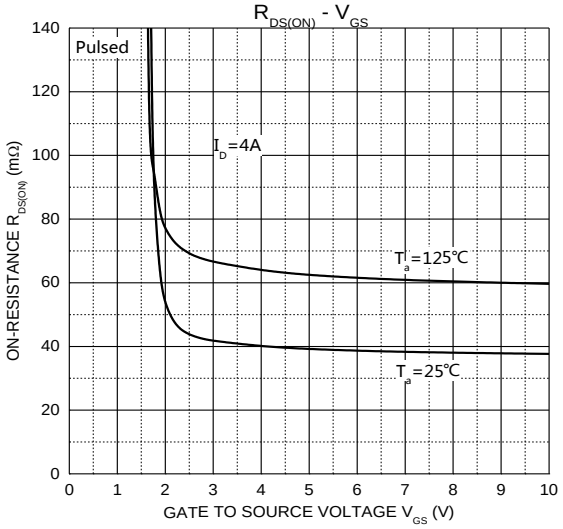
Transfer Characteristics



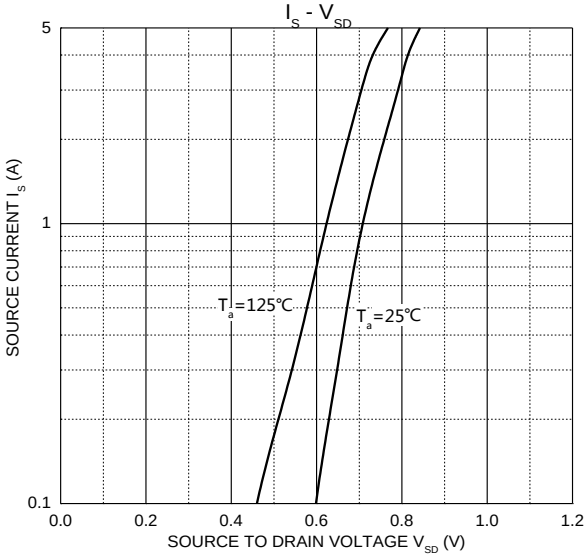
$R_{DS(ON)}$ – I_D



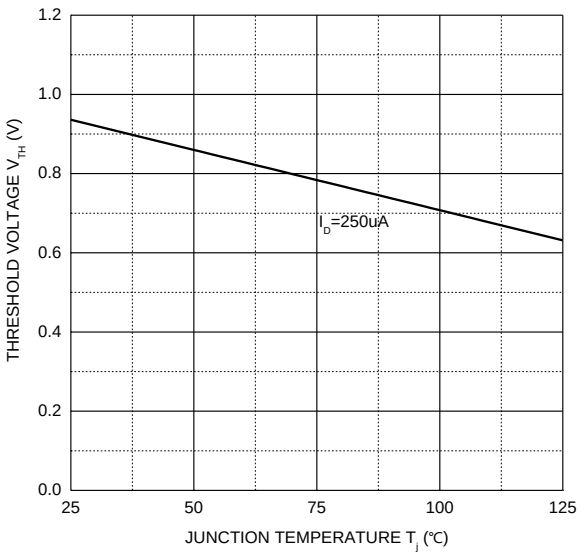
$R_{DS(ON)}$ - V_{GS}

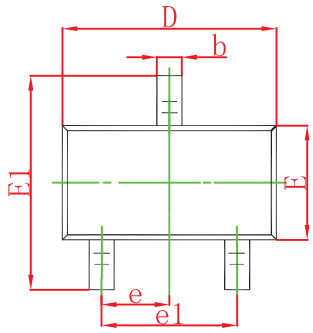


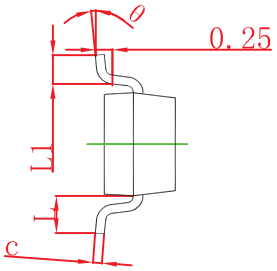
I_S - V_{SD}

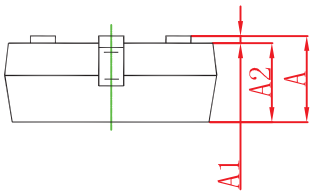


Threshold Voltage



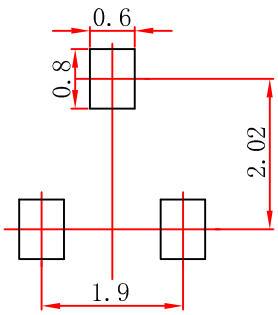






Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

SOT-23 Suggested Pad Layout



Note:
1.Controlling dimension:in millimeters.
2.General tolerance:± 0.05mm.
3.The pad layout is for reference purposes only.