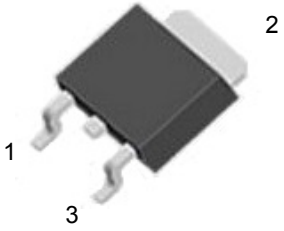
CTKD50N03

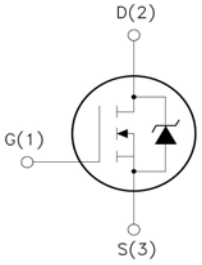
30V N-Channel MOSFET

Features:

- ☐ Low Intrinsic Capacitances.
- ☐ Excellent Switching Characteristics.
- ☐ Extended Safe Operating Area.
- ☐ Unrivalled Gate Charge :Qg= 23nC (Typ.).
- ☐ BVDSS=30V,I_D=50A
- ☐ R_{DS}(on) : 11mΩ (Max) @V_G=10V
- ☐ 100% Avalanche Tested

TO-252





1.Gate (G)
2.Drain (D)
3.Source (S)

$V_{(BR)DSS}$	$R_{DS(on)}$MAX	I_D
30V	11mΩ@10V	50A
	16mΩ@5V	

MAXIMUM RATINGS (T_a=25℃ unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	50	A
Pulsed Drain Current	I_{DM}	200	A
Single Pulsed Avalanche Energy	E_{AS}(1)	70	mJ
Power Dissipation	P_D	1.25	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	100	℃/W
Junction Temperature	T_J	150	℃
Storage Temperature Range	T_{stg}	-55 ~+150	℃
Lead Temperature for Soldering Purposes(1/8'' from case for 10s)	T_L	260	℃

(1).E_{AS} condition: V_{DD}=20V,L=0.5mH, R_G=25Ω, Starting T_J = 25°C

T_a=25℃ unless otherwise specified

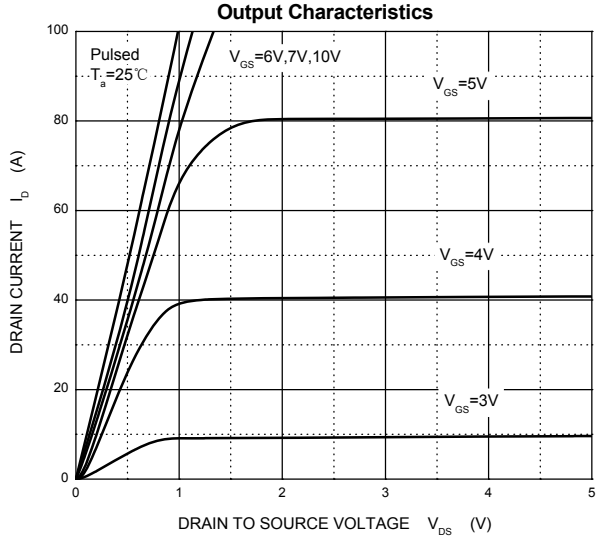
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Off characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D =250μA	30	--	--	V
Zero gate voltage drain current	I_{DSS}	V_{DS} =30V, V_{GS} =0V	--	--	1	μA
Gate-body leakage current	I_{GSS}	V_{DS} =0V, V_{GS} =±20V	--	--	±100	nA
On characteristics (note1)						
Gate-threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	1.0	1.5	3.0	V
Static drain-source on-sate resistance	$R_{DS(on)}$	V_{GS} =5V, I_D =20A	--	9	16	mΩ
		V_{GS} =10V, I_D =25A	--	7	11	mΩ
Forward transconductance	g_{FS}	V_{DS} =5V, I_D =20A	15	--	--	S
Dynamic characteristics (note 2)						
Input capacitance	C_{iss}	V_{DS} =15V,V_{GS} =0V, f =1MHz	--	2000	--	pF
Output capacitance	C_{oss}		--	280	--	
Reverse transfer capacitance	C_{rss}		--	160	--	
Switching characteristics (note 2)						
Total gate charge	Q_g	V_{DS}=10V, V_{GS}=10V, I_D=25A	--	23	--	nC
Gate-source charge	Q_{gs}		--	7	--	
Gate-drain charge	Q_{gd}		--	4.5	--	
Turn-on delay time	$t_{d(on)}$	V_{DD}=15V,I_D=20A, V_{GS}=10V,R_G=1.8Ω	--	10	--	ns
Turn-on rise time	t_r		--	8	--	
Turn-off delay time	$t_{d(off)}$		--	30	--	
Turn-off fall time	t_f		--	5	--	
Drain-Source Diode Characteristics						
Drain-source diode forward voltage(note1)	V_{SD}	V_{GS} =0V, I_S=25A	--	--	1.2	V
Continuous drain-source diode forward current	I_S	--	--	--	50	A
Pulsed drain-source diode forward current	I_{SM}	--	--	--	200	A

Notes:

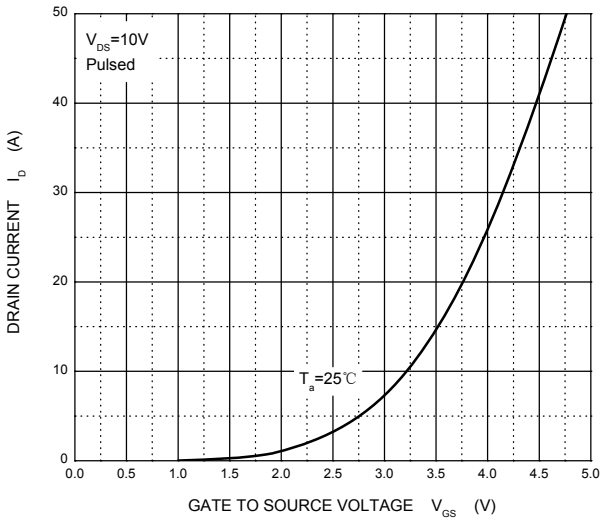
1. Pulse Test : Pulse Width≤300μs, duty cycle ≤2%.
2. Guaranteed by design, not subject to production.

Typical Characteristics

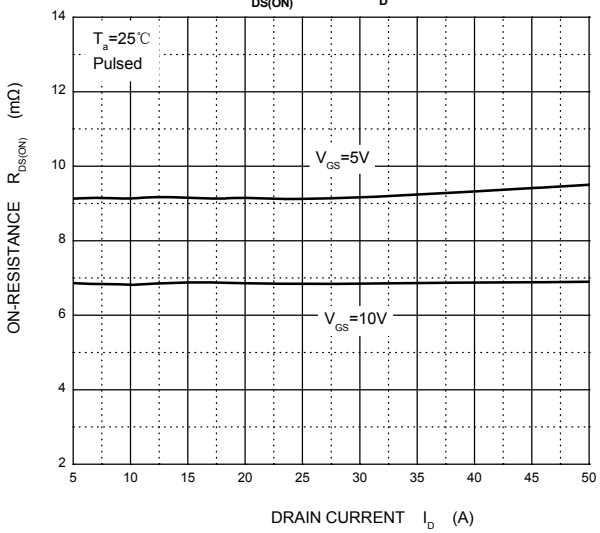
Output Characteristics



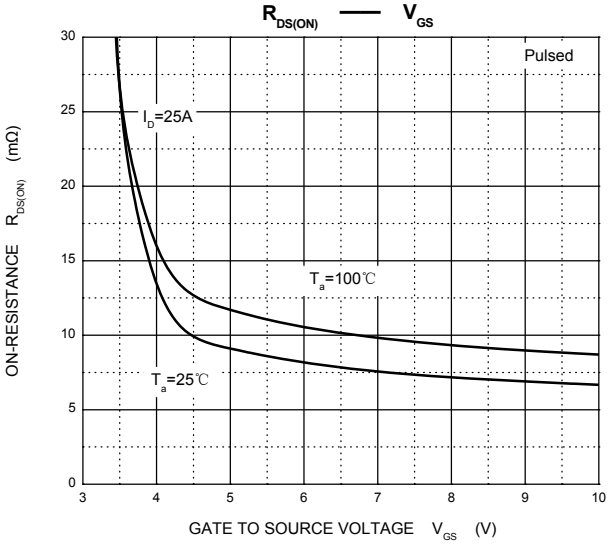
Transfer Characteristics



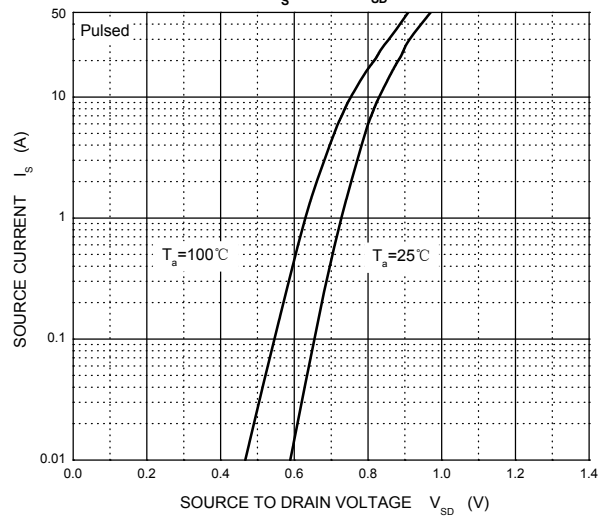
$R_{DS(ON)}$ — I_D



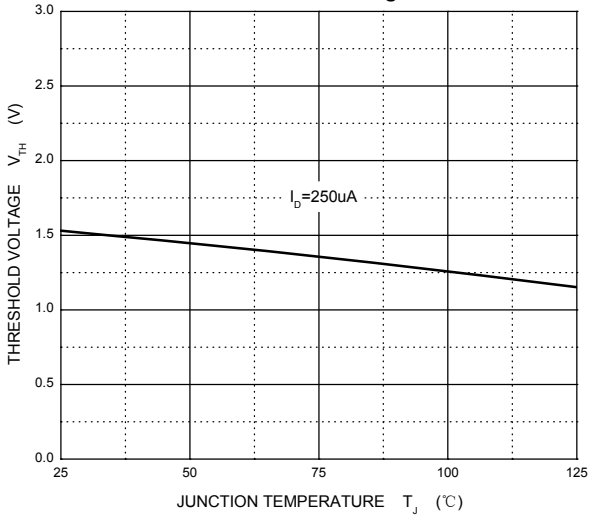
$R_{DS(ON)}$ — V_{GS}



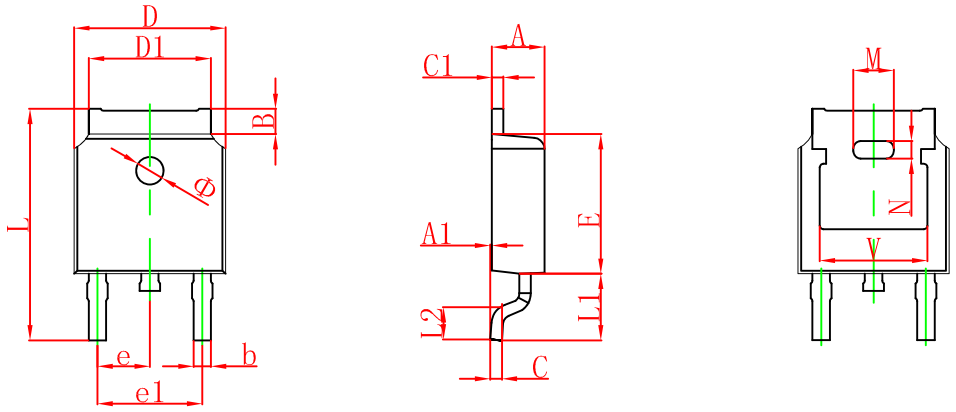
I_S — V_{SD}



Threshold Voltage

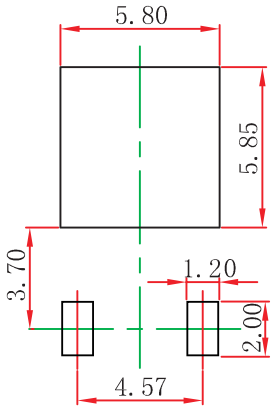


Package Dimension



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.380	0.087	0.094
A1	0.000	0.100	0.000	0.004
B	0.800	1.400	0.031	0.055
b	0.710	0.810	0.028	0.032
c	0.460	0.560	0.018	0.022
c1	0.460	0.560	0.018	0.022
D	6.500	6.700	0.256	0.264
D1	5.130	5.460	0.202	0.215
E	6.000	6.200	0.236	0.244
e	2.286 TYP.		0.090 TYP.	
e1	4.327	4.727	0.170	0.186
M	1.778REF.		0.070REF.	
N	0.762REF.		0.018REF.	
L	9.800	10.400	0.386	0.409
L1	2.9REF.		0.114REF.	
L2	1.400	1.700	0.055	0.067
V	4.830 REF.		0.190 REF.	
Φ	1.100	1.300	0.043	0.051

TO-252-2L Suggest Pad Layout



NOTE:

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