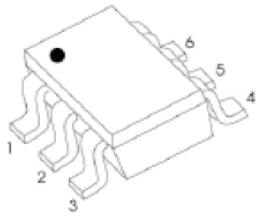
GP3599KDW

30V N-Channel + P-Channel MOSFET

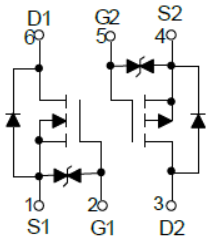
Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
-30V	480mΩ@-10V	-0.45A
	690mΩ@-4.5V	
30V	290mΩ@10V	0.6A
	320mΩ@4.5V	

SOT-363



Schematic diagram



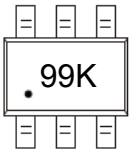
Feature

- Surface Mount Package
- Low $R_{DS(on)}$
- Low leakage current
- ESD Protected

Application

- Low voltage applications
- Load/Power Switching
- Battery Management for Ultra Small Portable Electronics

MARKING:



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

Parameter	Symbol	Value	Unit
P-MOSFET			
Drain-Source Voltage	V_{DS}	-30	V
Gate-Source Voltage	V_{GS}	±12	V
Continuous Drain Current(1)	I_D	-0.45	A
Pulsed Drain Current	I_{DM}	-1.2	A
Power Dissipation	P_D	1.4	W
N-MOSFET			
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	±12	V
Continuous Drain Current	I_D	0.6	A
Pulsed Drain Current(1)	I_{DM}	2.2	A
Power Dissipation	P_D	1.4	W
Temperature and Thermal Resistance			
Thermal Resistance from Junction to Ambient(2)	$R_{\theta JA}$	89	℃/W
Junction Temperature	T_J	150	℃
Storage Temperature	T_{STG}	-55~ +150	℃

P-channel 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} =±10V, V_{DS} = 0V			±10	μA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =-250μA	-0.5	-1.0	-1.5	V
Drain-source on-resistance(3)	$R_{DS(on)}$	V_{GS} =-10V, I_D =-0.30A		480	620	mΩ
		V_{GS} =-4.5V, I_D =-0.30A		690	900	
Forward tranconductance	g_{FS}	V_{DS} =-10V, I_D =-0.30A		1.2		S
Dynamic characteristics(4)						
Input Capacitance	C_{iss}	V_{DS}=-10V,V_{GS}=0V, F=1.0MHz		120		pF
Output Capacitance	C_{oss}			18		
Reverse Transfer Capacitance	C_{rss}			9		
Switching Characteristics(4)						
Turn-on delay time	$t_{d(on)}$	V_{DS}=-10V,I_D=-200mA, V_{GS}=-4.5V,R_G=10Ω		9		nS
Turn-on rise time	t_r			6		
Turn-off delay time	$t_{d(off)}$			34		
Turn-off fall time	t_f			20		
Source-Drain Diode characteristics						
Diode forward voltage	V_{DS}	I_S=-0.4A, V_{GS} = 0V			-1.2	V

N-channel 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} =±10V, V_{DS} = 0V			±3	μA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	0.5	1.0	1.5	V
Drain-source on-resistance(3)	$R_{DS(on)}$	V_{GS} =10V, I_D =0.6A		290	370	mΩ
		V_{GS} =4.5V, I_D =0.6A		320	500	
Forward tranconductance	g_{FS}	V_{DS} =5V, I_D =0.5A		0.9		S
Dynamic characteristics(4)						
Input Capacitance	C_{iss}	V_{DS}=10V,V_{GS}=0V, F=1.0MHz		44		pF
Output Capacitance	C_{oss}			15		
Reverse Transfer Capacitance	C_{rss}			8		
Switching Characteristics(4)						
Turn-on delay time	$t_{d(on)}$	V_{DD}=10V, I_D=0.7A V_{GS}=4.5V,R_{GEN}=51Ω		5		ns
Turn-on rise time	t_r			8		
Turn-off delay time	$t_{d(off)}$			23		
Turn-off fall time	t_f			41		
Source-Drain Diode characteristics						
Diode forward voltage	V_{DS}	I_S=0.6A, V_{GS} = 0V		0.87	1.2	V

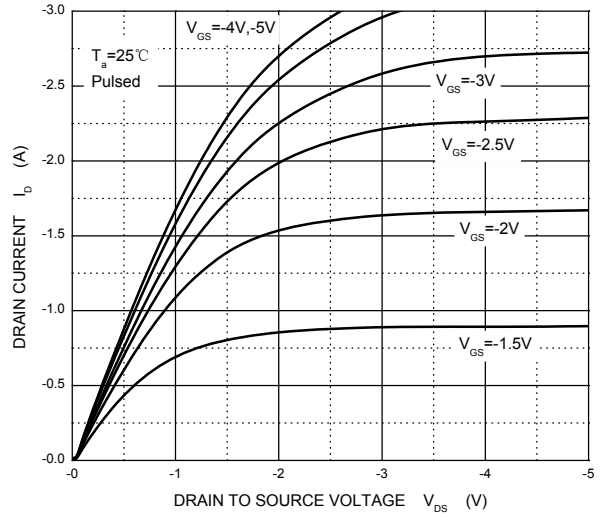
Notes:

1. Repetitive Rating : Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t < 5 sec.
3. Pulse Test : Pulse Width≤300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to production testing.

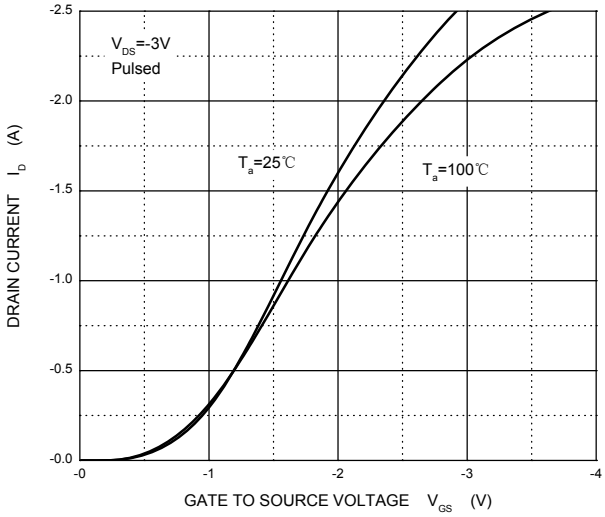
Typical Electrical and Thermal Characteristics

P-Channel MOS

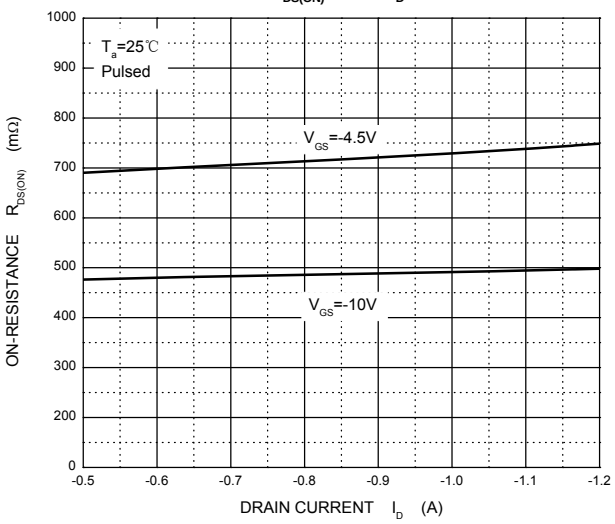
Output Characteristics



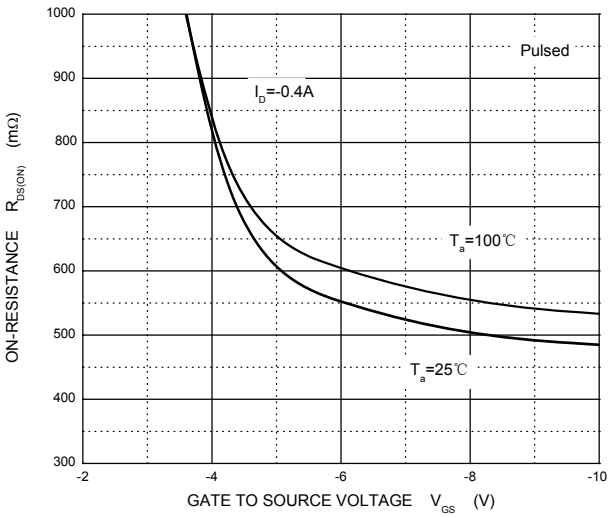
Transfer Characteristics



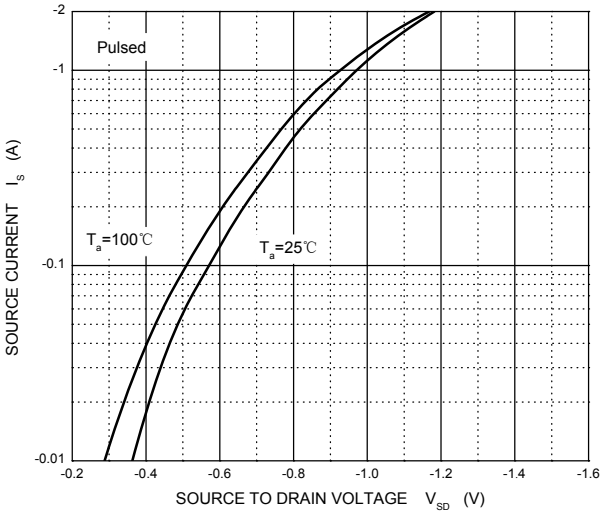
$R_{DS(ON)}$ —— I_D



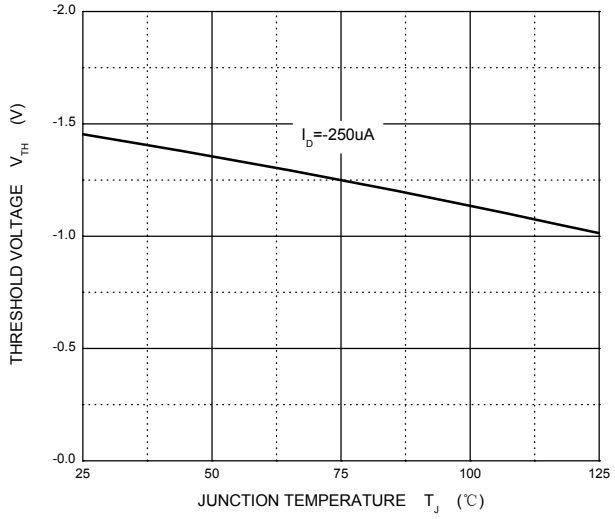
$R_{DS(ON)}$ —— V_{GS}



I_S —— V_{SD}

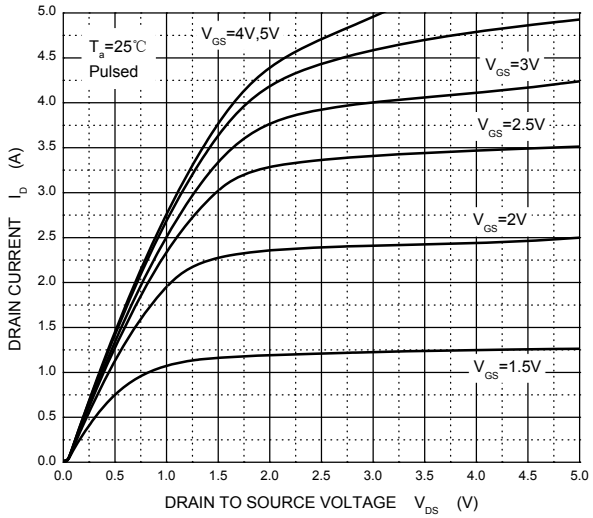


Threshold Voltage

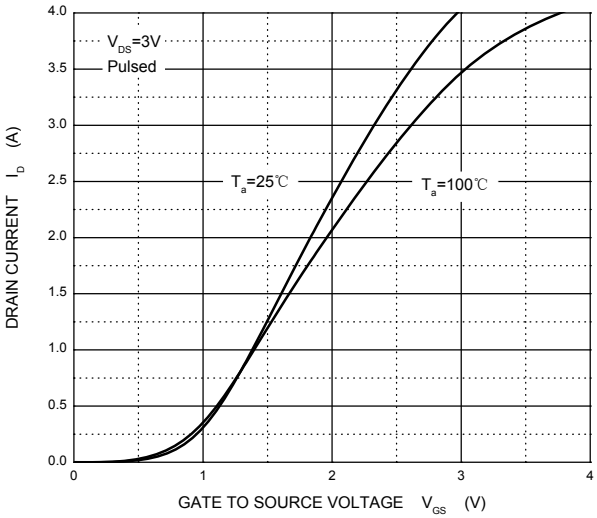


N-Channel MOS

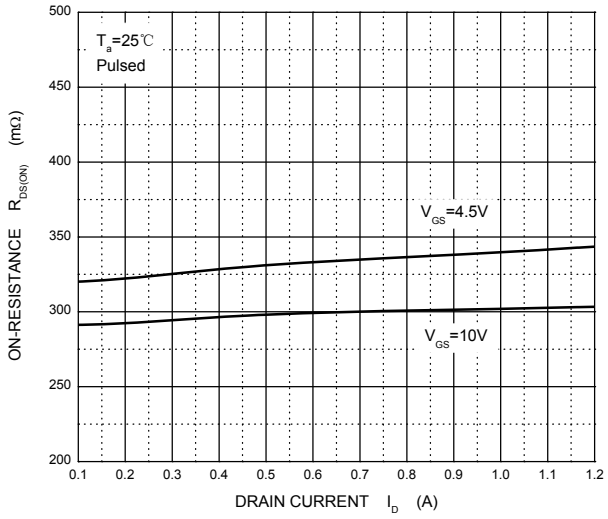
Output Characteristics



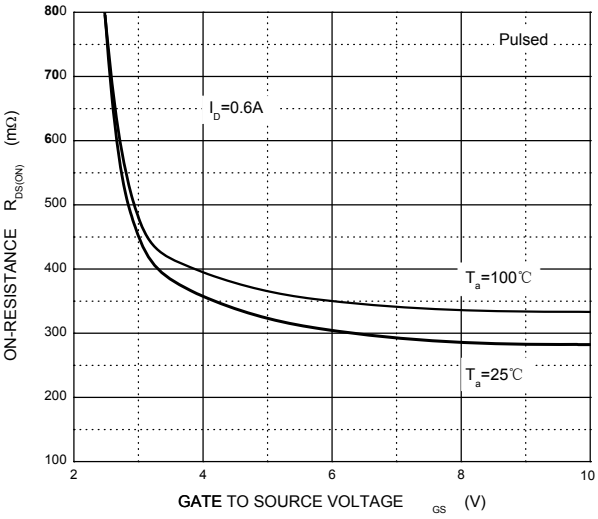
Transfer Characteristics



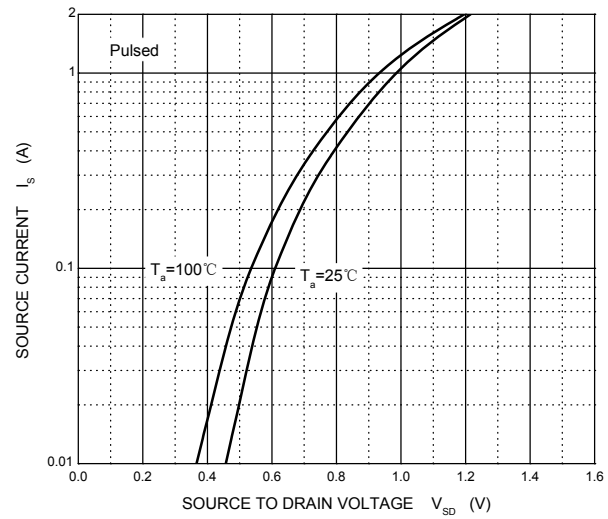
$R_{DS(ON)}$ —— I_D



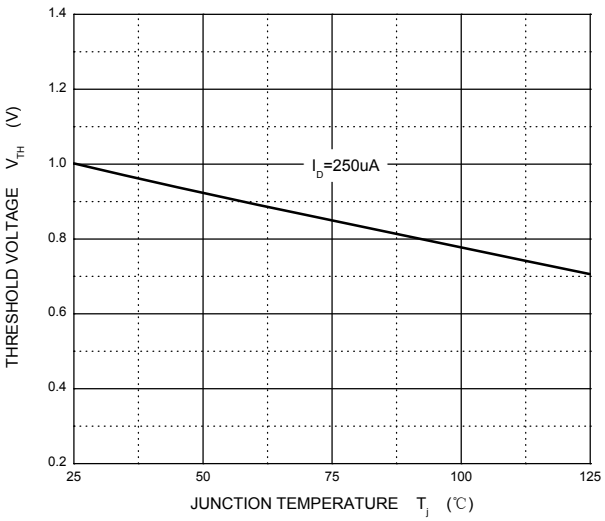
$R_{DS(ON)}$ —— V_{GS}



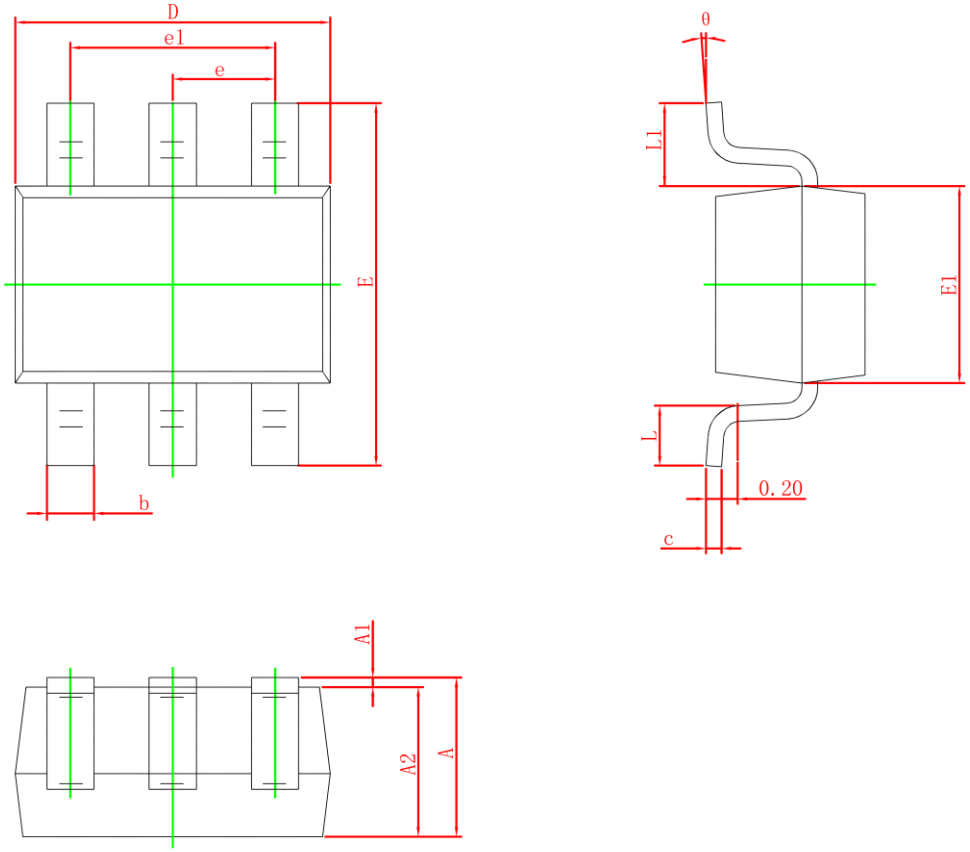
I_S —— V_{SD}



Threshold Voltage



SOT-363 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.000	0.035	0.039
A1	0	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.150	0.350	0.006	0.014
c	0.080	0.150	0.003	0.006
D	1.800	2.200	0.071	0.087
E	2.000	2.450	0.079	0.096
E1	1.150	1.350	0.045	0.053
e	0.650TYP		0.026TYP	
e1	1.200	1.400	0.047	0.055
L1	0.525REF		0.021REF	
L	0.260	0.460	0.010	0.018
θ	0°	8°	0°	8°