

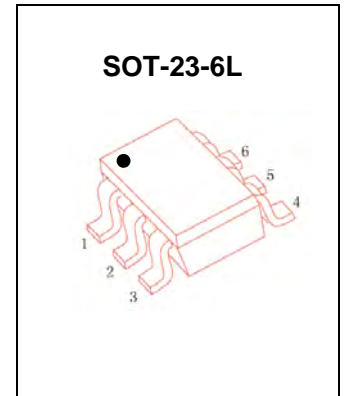
P-channel and N-channel Complementary MOSFETS

P-channel

$V_{(BR)DSS}$	$R_{DS(on)}$ MAX	I_D
- 30V	135mΩ@-10V	- 2.3A
	185mΩ@-4.5V	
	265mΩ@-2.5V	

N-channel

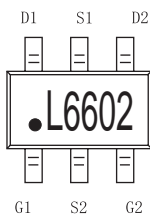
$V_{(BR)DSS}$	$R_{DS(on)}$ MAX	I_D
30V	60mΩ@10V	3.4A
	75mΩ@4.5V	
	115mΩ@2.5V	



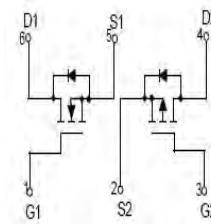
GENERAL DESCRIPTION

The FTK6602 uses advanced trench technology to provide excellent $R_{DS(on)}$ and low gate charge. The complementary MOSFETS form a high-speed power inverter and suitable for a multitude of applications.

MARKING



Equivalent Circuit



Maximum ratings ($T_a=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value		Unit
		N-channel	P-channel	
Drain-Source Voltage	V_{DS}	30	-30	V
Gate-Source Voltage	V_{GS}	± 12	± 12	V
Continuous Drain Current ⁽¹⁾	I_D	3.4	-2.3	A
Pulsed Drain Current ⁽²⁾	I_{DM}	30	-30	A
Power Dissipation $T_A=25^\circ\text{C}$	P_D	1.15	1.15	W
Power Dissipation $T_C=25^\circ\text{C}$	P_D	2.0	2.0	W
Thermal Resistance from Junction to Ambient ⁽¹⁾	$R_{\theta JA}$	110	110	$^\circ\text{C}/\text{W}$
Junction Temperature	T_J	150	150	$^\circ\text{C}$
Storage Temperature	T_{stg}	-55~+150	-55~+150	$^\circ\text{C}$

1. The value of $R_{\theta JA}$ is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with $T_A=25^\circ\text{C}$. The value in any given application depends on the user's specific board design. The current ratings is based on $t \leq 10\text{s}$ thermal resistance rating.

2. Repetitive rating, pulse with limited by junction temperature.



FTK6602

N-channel MOSFET Electrical Characteristics (T_A=25°C unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Typ	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} =24V, V _{GS} = 0V			1	μA
Gate-source leakage current (note1)	I _{GSS}	V _{GS} =±12V, V _{DS} = 0V			±100	nA
Drain-source on-resistance (note1)	R _{DS(on)}	V _{GS} =10V, I _D =3A			60	mΩ
		V _{GS} =4.5V, I _D =3A			75	mΩ
		V _{GS} =2.5V, I _D =2A			115	mΩ
Forward tranconductance (note1)	g _{FS}	V _{DS} =5V, I _D =3A	5			S
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	0.6		1.4	V
Diode forward voltage (note1)	V _{SD}	I _S =1A, V _{GS} =0V			1	V
Dynamic characteristics (note2)						
Input capacitance	C _{iss}	V _{GS} =0V, V _{DS} =15V, f =1MHz		390		pF
Output capacitance	C _{oss}			54.5		pF
Reverse transfer capacitance	C _{rss}			41		pF
Gate resistance	R _g	V _{GS} =0V, V _{DS} =0V, f =1MHz		3		Ω
Switching Characteristics(note2)						
Turn-on delay time	t _{d(on)}	V _{GS} =10V, V _{DS} =15V, R _L =5Ω, R _{GEN} =6Ω		4		ns
Turn-on rise time	t _r			2		ns
Turn-off delay time	t _{d(off)}			22		ns
Turn-off fall time	t _f			3		ns

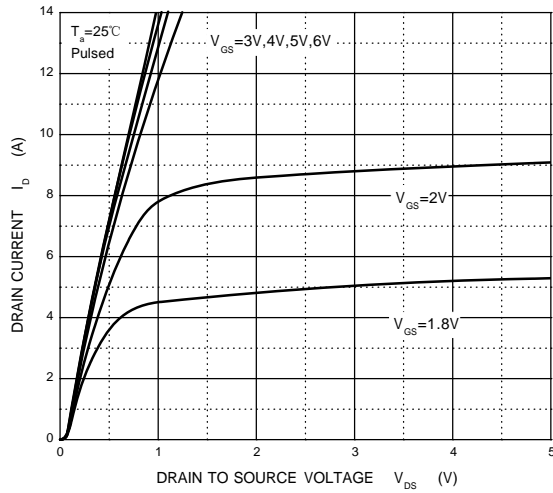
P-channel MOSFET Electrical Characteristics (T_A=25°C unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Typ	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} =-24V, V _{GS} = 0V			-1	μA
Gate-source leakage current	I _{GSS}	V _{GS} =±12V, V _{DS} = 0V			±100	nA
Drain-source on-resistance (note1)	R _{DS(on)}	V _{GS} =-10V, I _D =-2.3A			135	mΩ
		V _{GS} =-4.5V, I _D =-2A			185	mΩ
		V _{GS} =-2.5V, I _D =-1A			265	mΩ
Forward tranconductance (note1)	g _{FS}	V _{DS} =-5V, I _D =-2.3A	5			S
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =-250μA	-0.6		-1.4	V
Diode forward voltage (note1)	V _{DS}	I _S =-1A, V _{GS} =0V			-1	V
Dynamic characteristics (note2)						
Input capacitance	C _{iss}	V _{GS} =0V, V _{DS} =-15V, f =1MHz		409		pF
Output capacitance	C _{oss}			55		pF
Reverse transfer capacitance	C _{rss}			42		pF
Gate resistance	R _g	V _{GS} =0V, V _{DS} =0V, f =1MHz		12		Ω
Switching Characteristics (note2)						
Turn-on delay time	t _{d(on)}	V _{GS} =-10V, V _{DS} =-15V, R _L =6Ω, R _{GEN} =6Ω		13		ns
Turn-on rise time	t _r			10		ns
Turn-off delay time	t _{d(off)}			28		ns
Turn-off fall time	t _f			13		ns

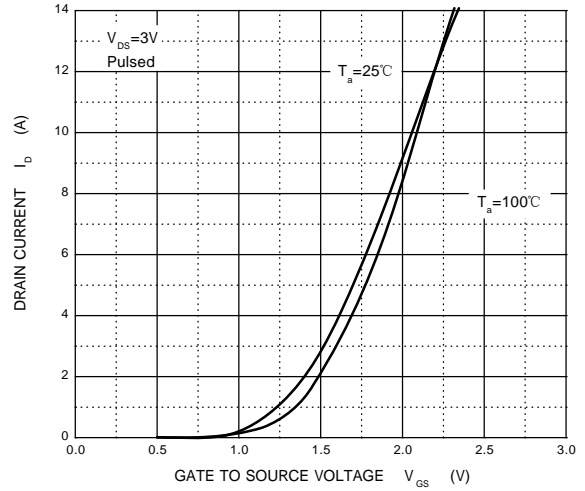
- Notes :**
1. Pulse Test : Pulse width≤300μs, duty cycle≤0.5%.
 2. Guaranteed by design, not subject to production testing.

N-CHANNEL TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

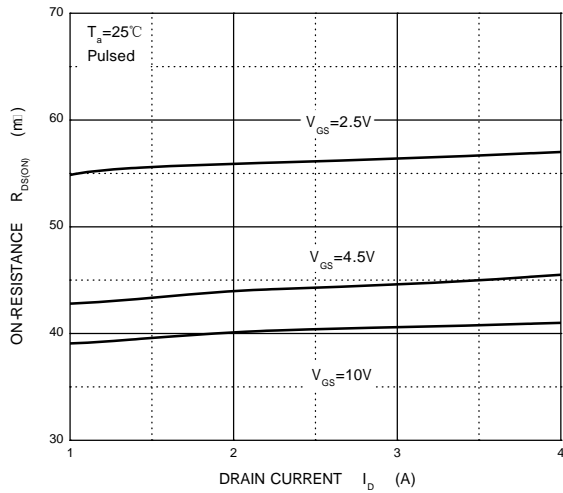
Output Characteristics



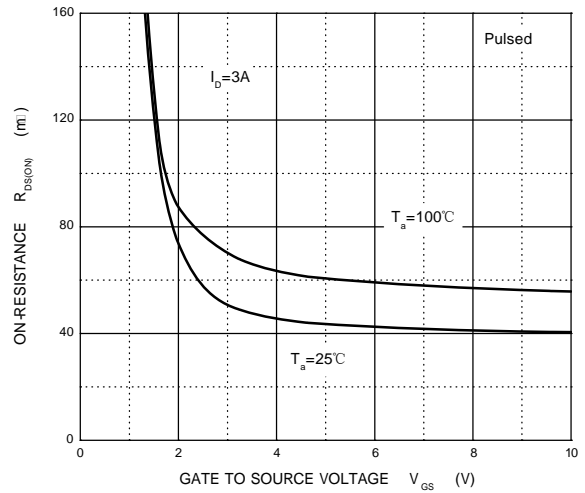
Transfer Characteristics



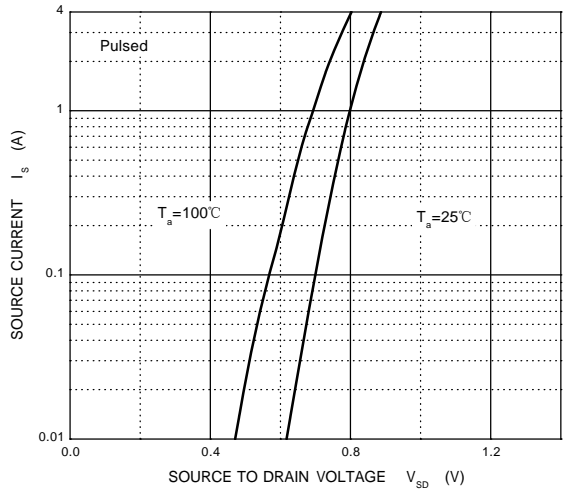
$R_{DS(ON)}$ — I_D



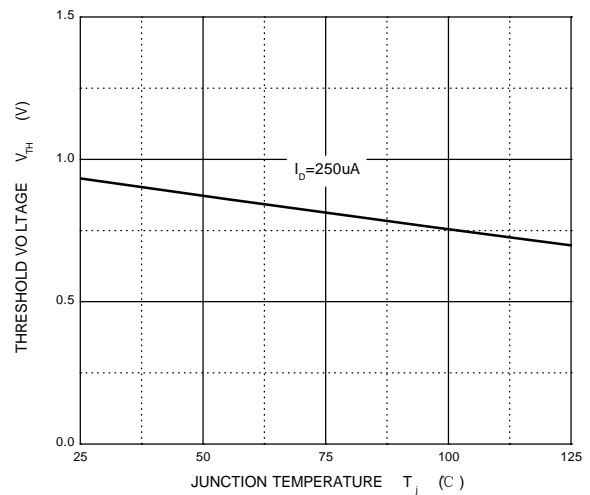
$R_{DS(ON)}$ — V_{GS}



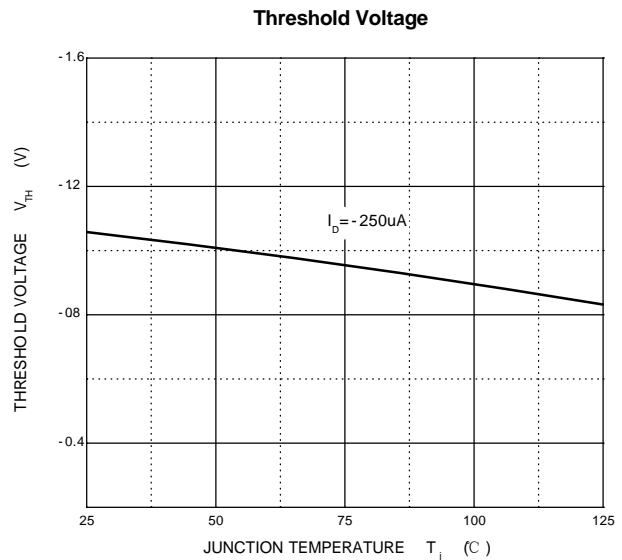
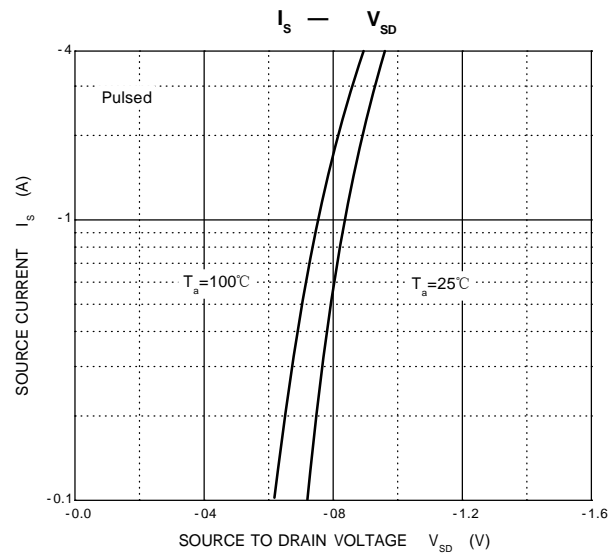
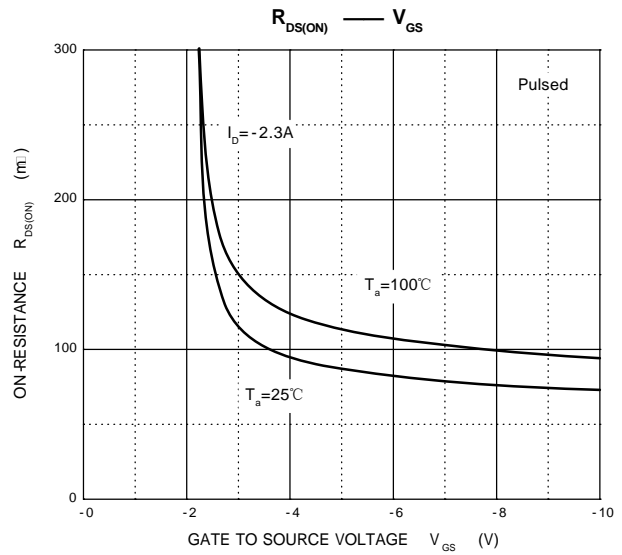
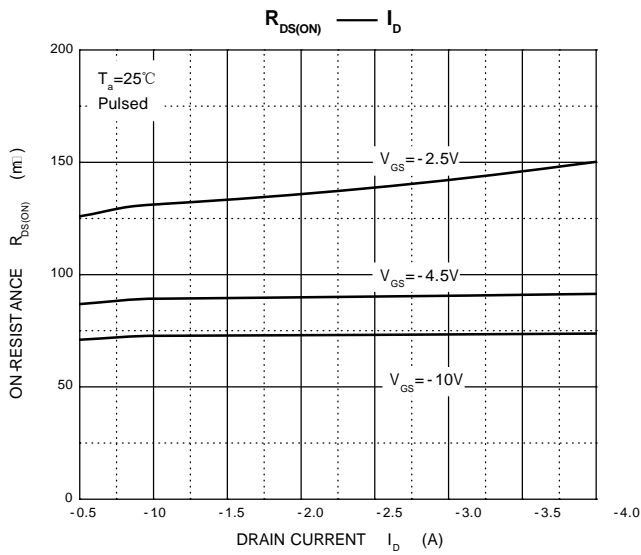
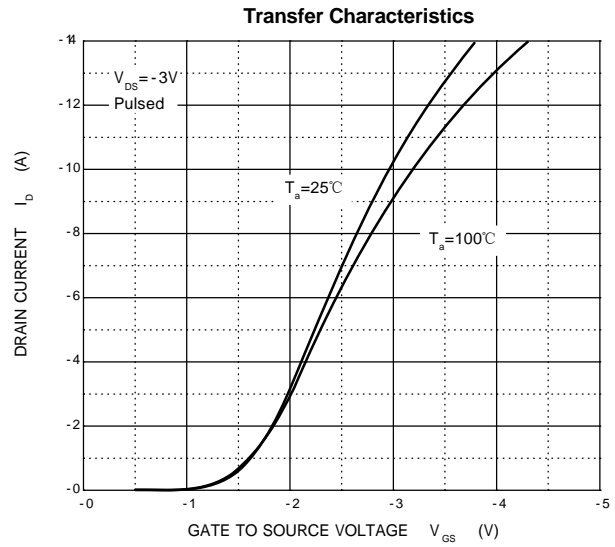
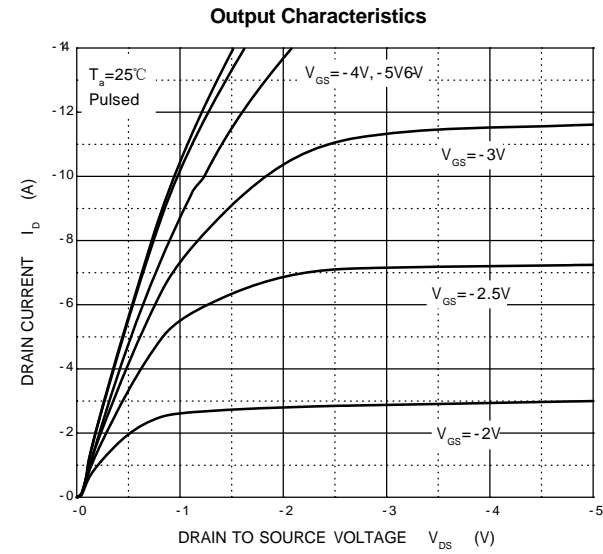
I_S — V_{SD}



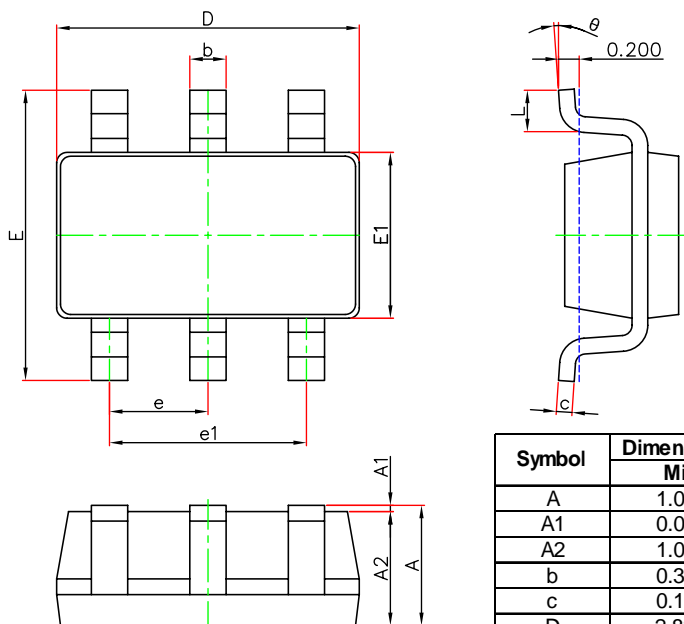
Threshold Voltage



P-CHANNEL TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

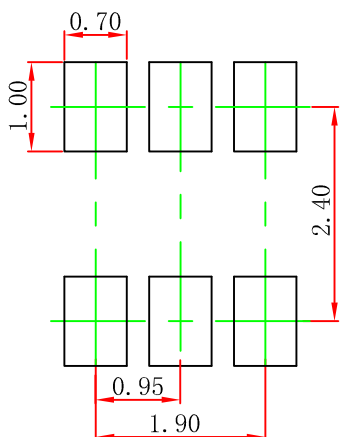


SOT-23-6L Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E1	1.500	1.700	0.059	0.067
E	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

SOT-23-6L Suggested Pad Layout



- Note:
1. Controlling dimension: in millimeters.
 2. General tolerance: $\pm 0.05\text{mm}$.
 3. The pad layout is for reference purposes only.