Small switching (30V, 0.1A)
UM6K1N

●Features
1) Two 2SK3018 transistors in a single UMT package.
2) The MOSFET elements are independent, eliminating interference.
3) Mounting cost and area can be cut in half.
4) Low on-resistance.
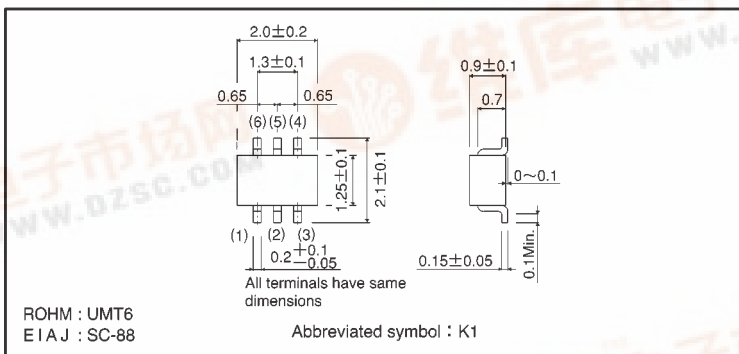5) Low voltage drive (2.5V) makes this device ideal for portable equipment.
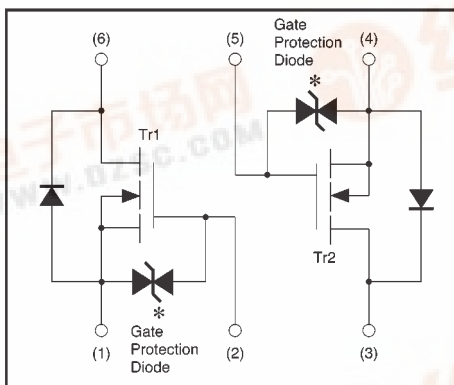
●Applications
Interfacing, switching (30V, 100mA)

●Structure
Silicon N-channel
MOSFET

●External dimensions (Units: mm)

ROHM : UMT6
E I A J : SC-88

Abbreviated symbol : K1

All terminals have same dimensions

●Equivalent circuit

(1) Tr1 Source
(2) Tr1 Gate
(3) Tr2 Drain
(4) Tr2 Source
(5) Tr2 Gate
(6) Tr1 Drain

✳ A protection diode has been built in between the gate and the source to protect against static electricity when the product is in use. Use the protection circuit when rated voltages are exceeded.

●Absolute maximum ratings (Ta = 25°C)

Parameter		Symbol	Limits	Unit
Drain-source voltage		V_{DSS}	30	V
Gate-source voltage		V_{GSS}	±20	V
Drain current	Continuous	I_D	100	mA
	Pulsed	I_{DP}[*1]	200	mA
Reverse drain current	Continuous	I_{DR}	100	mA
	Pulsed	I_{DRP}[*1]	200	mA
Total power dissipation (Tc=25°C)		P_D[*2]	150	mW
Channel temperature		Tch	150	°C
Storage temperature		Tstg	−55〜+150	°C

✳1 Pw≦10 μs, Duty cycle≦50%

●Packaging specifications

Type	Package	Taping
	Code	TN
	Basic ordering unit (pieces)	3000
UM6K1N		○
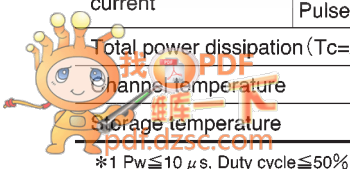
●Electrical characteristics (Ta = 25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Gate-source leakage	I_{GSS}	—	—	± 1	μA	$V_{GS}=\pm 20V$, $V_{DS}=0V$
Drain-source breakdown voltage	$V_{(BR)DSS}$	30	—	—	V	$I_D=10\mu A$, $V_{GS}=0V$
Zero gate voltage drain current	I_{DSS}	—	—	1.0	μA	$V_{DS}=30V$, $V_{GS}=0V$
Gate threshold voltage	$V_{GS(th)}$	0.8	—	1.5	V	$V_{DS}=3V$, $I_D=100\mu A$
Static drain-source on-starte resistance	$R_{DS(on)}$	—	5	8	Ω	$I_D=10mA$, $V_{GS}=4V$
	$R_{DS(on)}$	—	7	13	Ω	$I_D=1mA$, $V_{GS}=2.5V$
Forward transfer admittance	$\mid Y_{fs} \mid$	20	—	—	mS	$I_D=10mA$, $V_{DS}=3V$
Input capacitance	C_{iss}	—	13	—	pF	$V_{DS}=5V$
Output capacitance	C_{oss}	—	9	—	pF	$V_{GS}=0V$
Reverse transfer capacitance	C_{rss}	—	4	—	pF	$f=1MHz$
Turn-on delay time	$t_{d(on)}$	—	15	—	ns	$I_D=10mA$, $V_{DD}\fallingdotseq 5V$
Rise time	t_r	—	35	—	ns	$V_{GS}=5V$
Turn-off delay time	$t_{d(off)}$	—	80	—	ns	$R_L=500\Omega$
Fall time	t_r	—	80	—	ns	$R_{GS}=10\Omega$

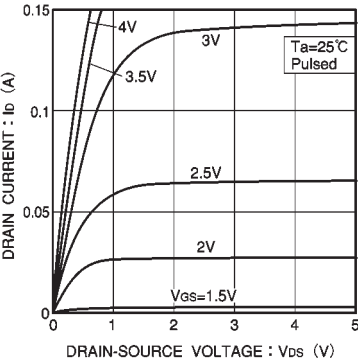●Electrical characteristic curves
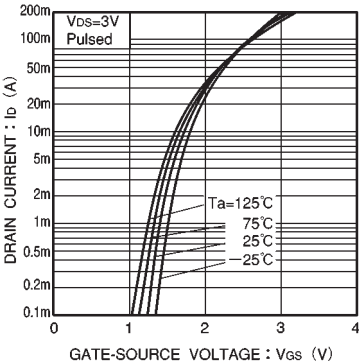

Fig.1 Typical output characteristics

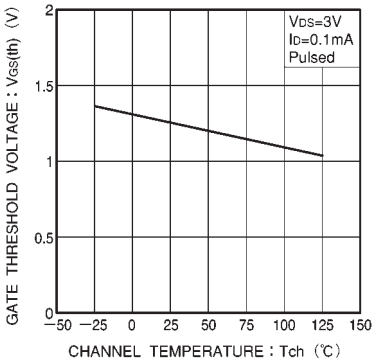Fig.2 Typical transfer characteristics

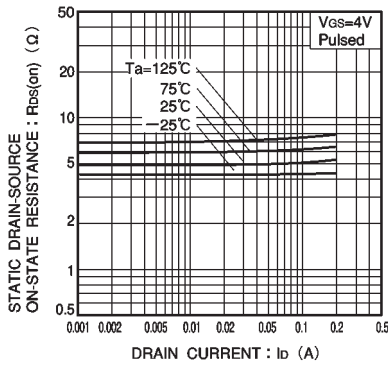Fig.3 Gate threshold voltage vs. channel temperature

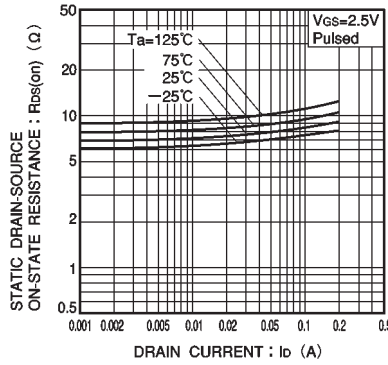Fig.4   Static drain-source on-state resistance vs. drain current (Ⅰ)

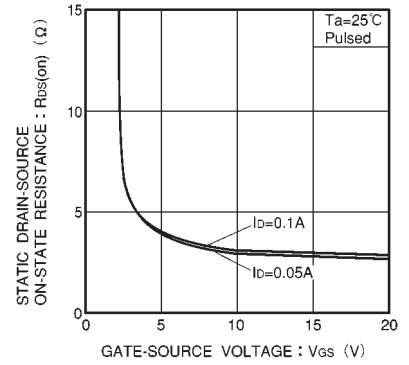Fig.5   Static drain-source on-state resistance vs. drain current (Ⅱ)

Fig.6   Static drain-source on-state resistance vs. gate-source voltage
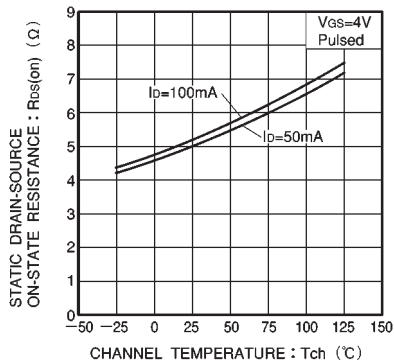

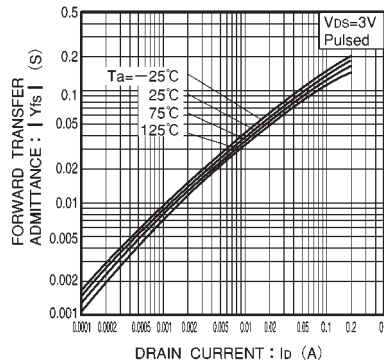Fig.7   Static drain-source on-state resistance vs. channel temperature

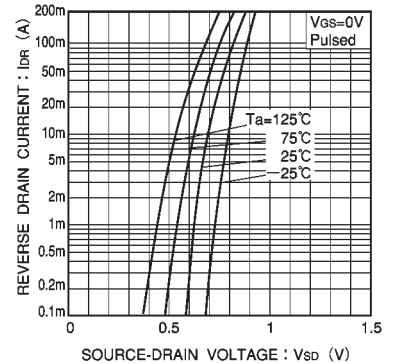Fig.8   Forward transfer admittance vs. drain current

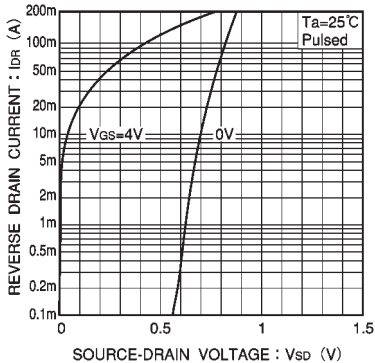Fig.9   Reverse drain current vs. source-drain voltage (Ⅰ)

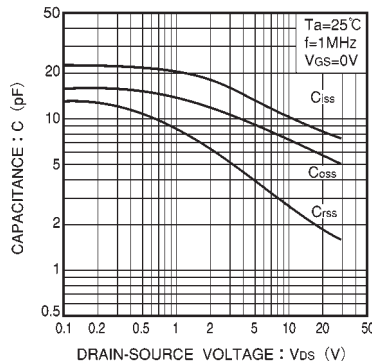Fig.10   Reverse drain current vs. source-drain voltage (Ⅱ)

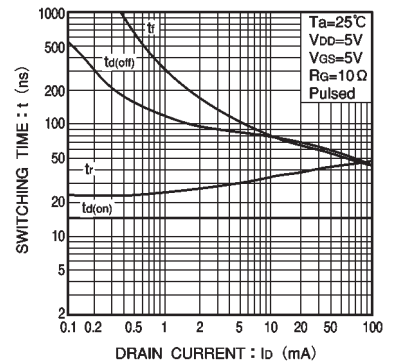Fig.11   Typical capacitance vs. drain-source voltage

Fig.12   Switching characteristics (See Figures 13 and 14 for the measurement circuit and resultant waveforms)

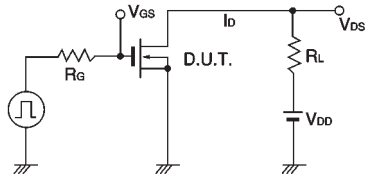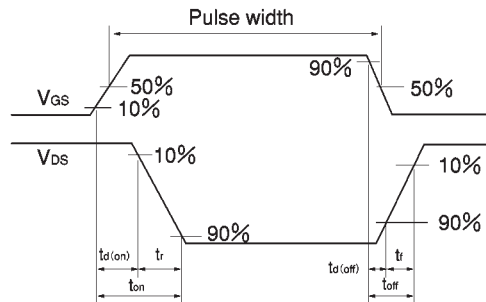●Switching characteristics measurement circuit

Fig.13   Switching time measurement circuit

Fig.14   Switching time waveforms