N-Channel   MOSFET

FEATURES

- Low on-resistance
- Fast switching speed
- Low voltage drive makes this device ideal for portable equipment
- Easily designed drive circuits
- Easy to parallel

Marking: KN

SOT-323

1. GATE
2. SOURCE
3. DRAIN

MOSFET MAXIMUM RATINGS (TA = 25°C unless otherwise noted)

Symbol	Parameter	Value	Units
V_{DSS}	Drain-Source voltage	30	V
V_{GSS}	Gate-Source Voltage	±20	V
I_D	Continuous Drain Current	0.1	A
I_{DM}	Drain Current-Pulsed	0.4	A
P_D	Power Dissipation	0.2	W
T_J	Junction Temperature	150	°C
T_{stg}	Storage Temperature	-55-150	°C
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	625	°C /W

Equivalent circuit

MOSFET ELECTRICAL CHARACTERISTICS (Tamb=25°C unless otherwise specified)

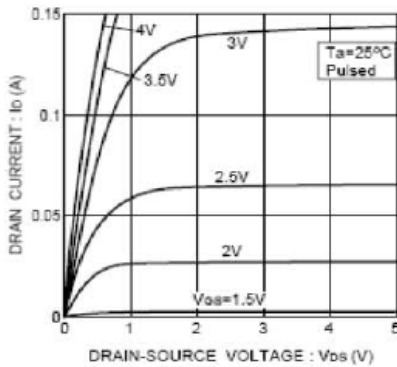| Parameter	Symbol	Test Condition	Min	Typ	Max	Units
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS} = 0V$, $I_D = 10\mu A$	30			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 30V$, $V_{GS} = 0V$			0.2	μA
Gate –Source leakage current	I_{GSS}	$V_{GS} = \pm 20V$, $V_{DS} = 0V$			±500	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = 3V$, $I_D = 100\mu A$	0.8		1.5	V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS} = 4V$, $I_D = 10mA$			8	Ω
		$V_{GS} = 2.5V$, $I_D = 1mA$			13	Ω
Forward Transconductance	g_{FS}	$V_{DS} = 3V$, $I_D = 10mA$	20			mS
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{DS} = 5V$, $V_{GS} = 0V$, $f = 1MHz$		13		pF
Output Capacitance	C_{oss}			9		pF
Reverse Transfer Capacitance	C_{rss}			4		pF
Switching Characteristics						
Turn-On Delay Time	$t_{d(on)}$	$V_{GS} = 5V$, $V_{DD} = 5V$, $I_D = 10mA$, $R_G = 10\Omega$, $R_L = 500\Omega$,		15		ns
Turn-On Rise Time	t_r			35		ns
Turn-Off Delay Time	$t_{d(off)}$			80		ns
Turn-Off Fall Time	t_f			80		ns

Typical Characteristics

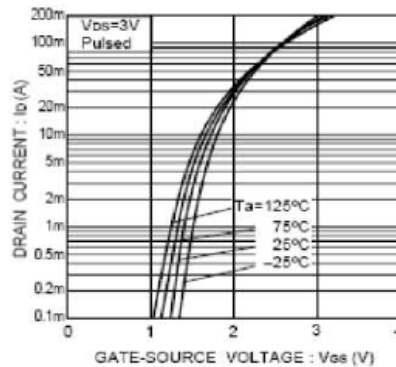Fig.1 Typical output characteristics
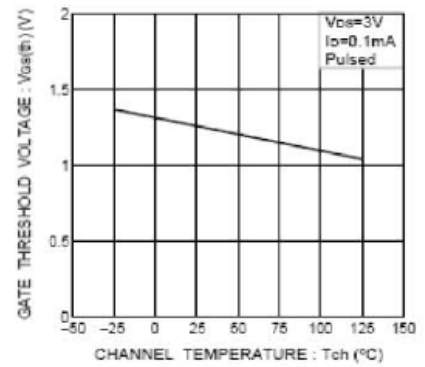
Fig.2 Typical transfer characteristics

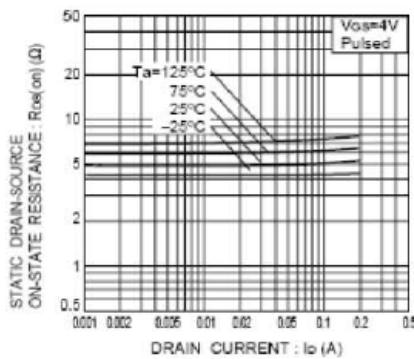Fig.3 Gate threshold voltage vs. channel temperature

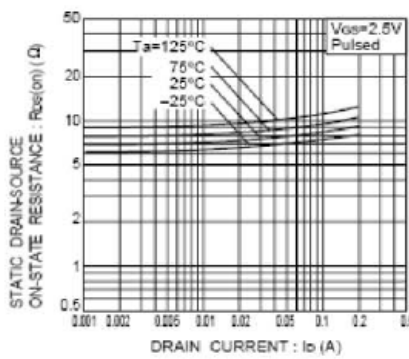Fig.4 Static drain-source on-state resistance vs. drain current (I)

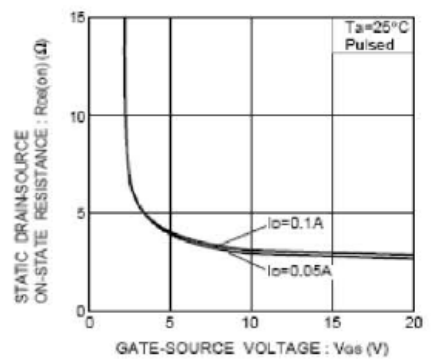Fig.5 Static drain-source on-state resistance vs. drain current (II)

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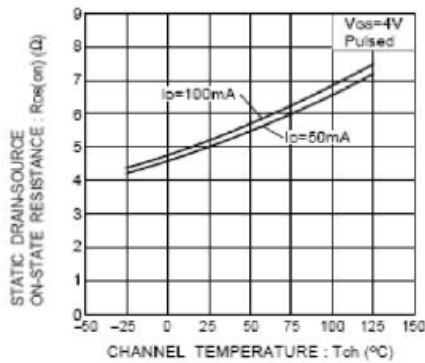
Typical Characteristics

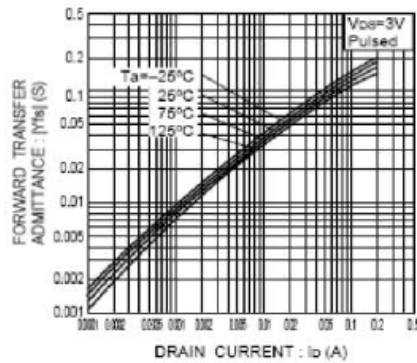Fig.7 Static drain-source on-state resistance vs. channel temperature
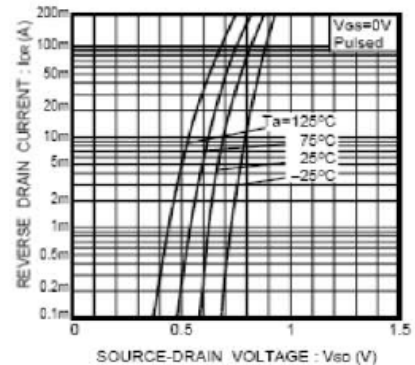

Fig.8 Forward transfer admittance vs. drain current

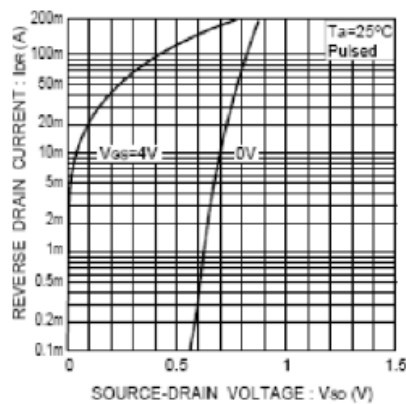Fig.9 Reverse drain current vs. source-drain voltage (I)

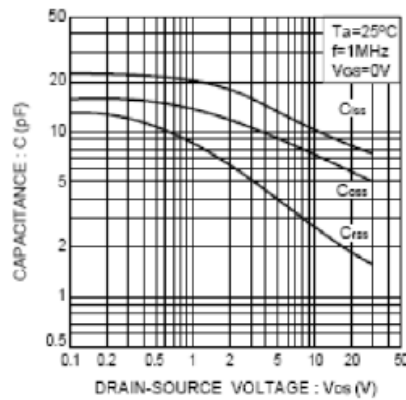Fig.10 Reverse drain current vs. source-drain voltage (II)

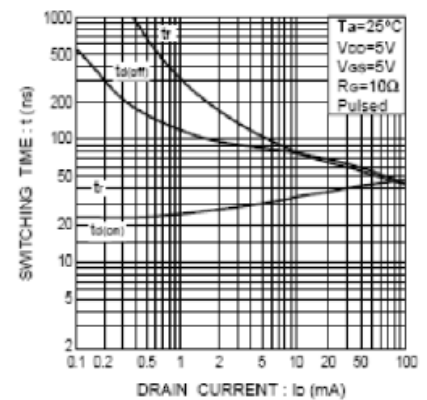Fig.11 Typical capacitance vs. drain-source voltage

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