

DKG1020

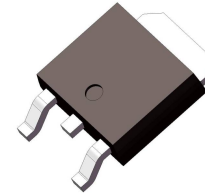
Aug. 2011

Features

- Low on-state resistance
- Built-in gate protection diode
- SMD PKG

Package

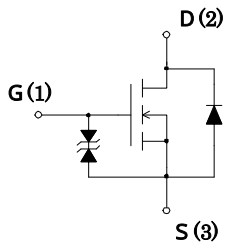
TO252



Applications

- DC / DC converter
- Switching

Internal Equivalent Circuit



Key Specifications

- $V_{(BR)DSS} = 100V$ ($I_D = 100\mu A$)
- $R_{DS(ON)} = 52 m\Omega$ max. ($V_{GS} = 10V, I_D = 10A$)
- $R_{DS(ON)} = 59 m\Omega$ max. ($V_{GS} = 4.5V, I_D = 10A$)

Absolute maximum ratings

($T_a = 25^\circ C$)

Characteristic	Symbol	Rating	Unit
Drain to Source Voltage	V_{DSS}	100	V
Gate to Source Voltage	V_{GSS}	± 20	V
Continuous Drain Current	I_D	± 20	A
Maximum Power Dissipation	P_D	40 ($T_c = 25^\circ C$)	W
Single Pulse Avalanche Energy	E_{AS}^{*1}	62.5	mJ
Channel Temperature	T_{ch}	150	$^\circ C$
Storage Temperature	T_{stg}	-55 to +150	$^\circ C$
Maximum Drain to Source dv/dt	$dv/dt 1^{*1}$	0.6	V/ns
Peak diode recovery dv/dt	$dv/dt 2^{*2}$	5	V/ns
Peak diode recovery di/dt	di/dt^{*2}	100	A/ μs

*1 $V_{DD} = 14V, L = 1mH, I_L = 11A$, unclamped, See Fig.1

*2 $I_{SD} = 20A$, See Fig.2

Electrical characteristics

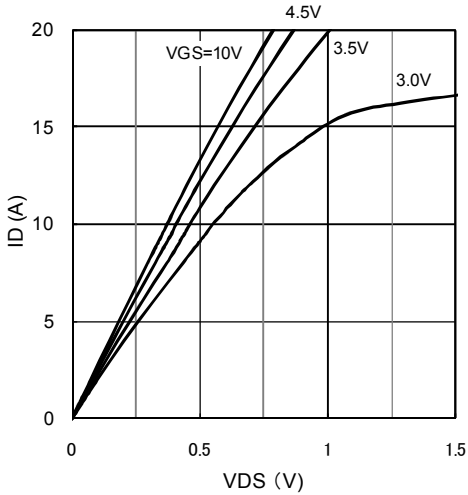
(Ta=25°C)

Characteristic	Symbol	Test Conditions	Limits			Unit
			MIN	TYP	MAX	
Drain to Source breakdown Voltage	$V_{(BR)DSS}$	$I_D=100\mu A, V_{GS}=0V$	100			V
Gate to Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20V$			± 10	μA
Drain to Source Leakage Current	I_{DSS}	$V_{DS}=100V, V_{GS}=0V$			100	μA
Gate Threshold Voltage	V_{TH}	$V_{DS}=10V, I_D=1mA$	1.5	2.0	2.5	V
Forward Transconductance	$Re(yfs)$	$V_{DS}=10V, I_D=10A$	9.0			S
Static Drain to Source On-Resistance	$R_{DS(ON)}$	$I_D=10A, V_{GS}=10V$		41	52	m Ω
		$I_D=10A, V_{GS}=4.5V$		45	59	
Input Capacitance	C_{iss}	$V_{DS}=10V$ $V_{GS}=0V$ $f=1MHz$		2200		pF
Output Capacitance	C_{oss}			210		
Reverse Transfer Capacitance	C_{rss}			110		
Turn-On Delay Time	$t_{d(on)}$	$I_D=10A, V_{DD}=50V$ $R_G=20\Omega, R_L=5\Omega$ $V_{GS}=10V$ See Fig.3		40		ns
Rise Time	t_r			140		
Turn-Off Delay Time	$t_{d(off)}$			280		
Fall Time	t_f			340		
Total Gate Charge	Q_g	$V_{DD}=50V$ $V_{GS}=10V$ $I_D=20V$		47		nC
Gate to Source Charge	Q_{gs}			8		
Gate to Source Charge	Q_{gd}			7		
Source-Drain Diode Forward Voltage	V_{SD}	$I_{SD}=20A, V_{GS}=0V$		0.9	1.2	V
Source-Drain Diode Reverse Recovery Time	t_{rr}	$I_{SD}=20A$ $di/dt=100A/\mu s$		50		ns
Source-Drain Diode Reverse Recovery Time	Q_{rr}			60		nC
Thermal Resistance Junction to Case	$R_{th(ch-c)}$				3.125	$^{\circ}C/W$

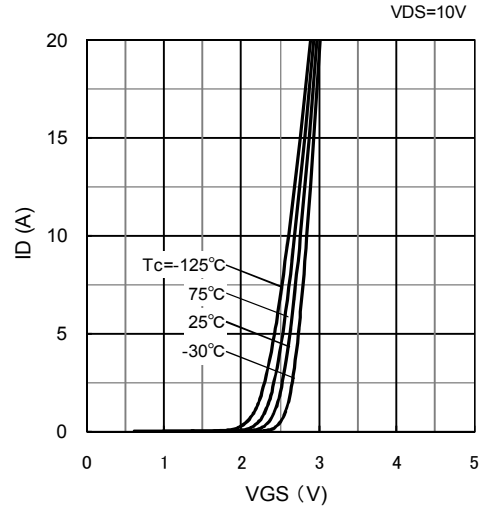
The information included herein is believed to be accurate and reliable. However, SANKEN ELECTRIC CO., LTD assumes no responsibility for its use ; nor for any infringements of patents or other rights of third parties that may result from its use.

Characteristic Curves (Tc=25°C)

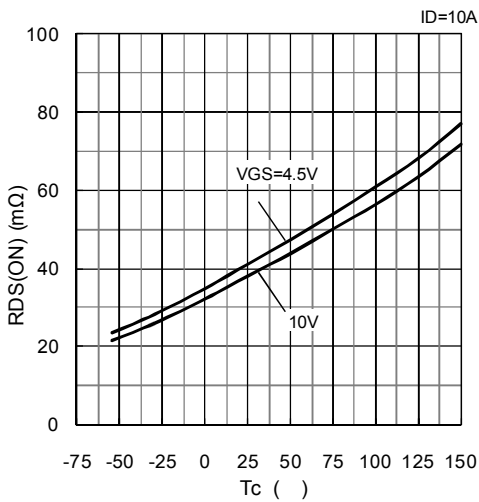
ID - VDS characteristics (typical)



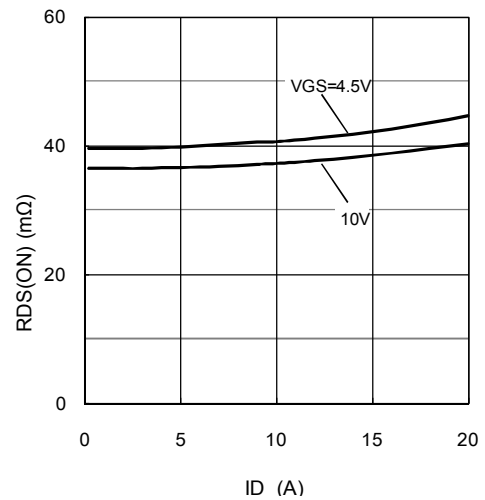
ID - VGS characteristics (typical)



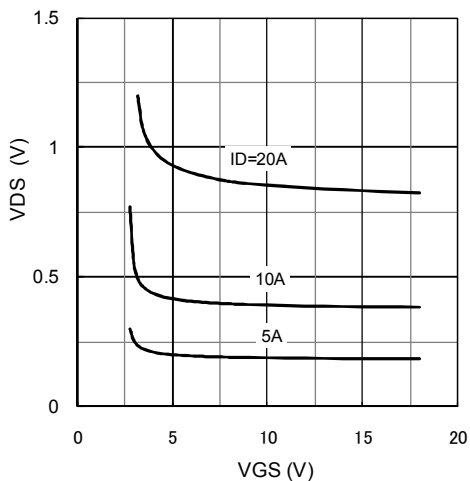
RDS(ON) - Tc characteristics (typical)



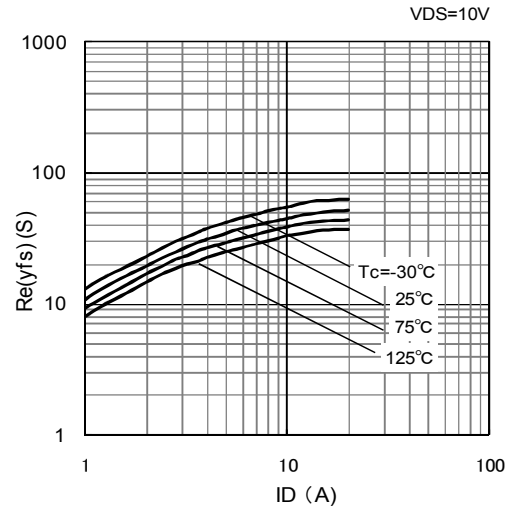
RDS(ON) - ID characteristics (typical)



VDS - VGS characteristics (typical)

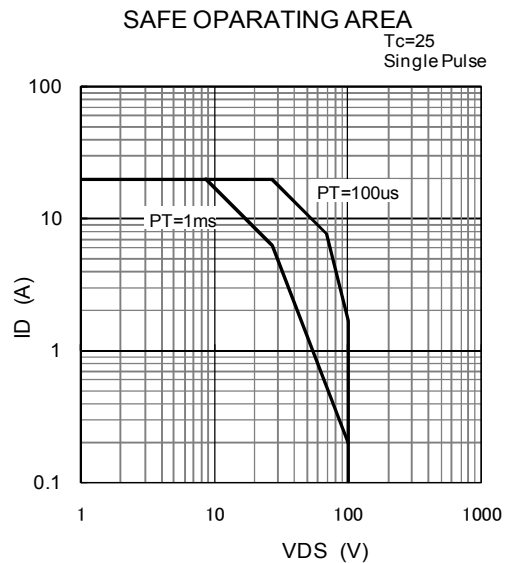
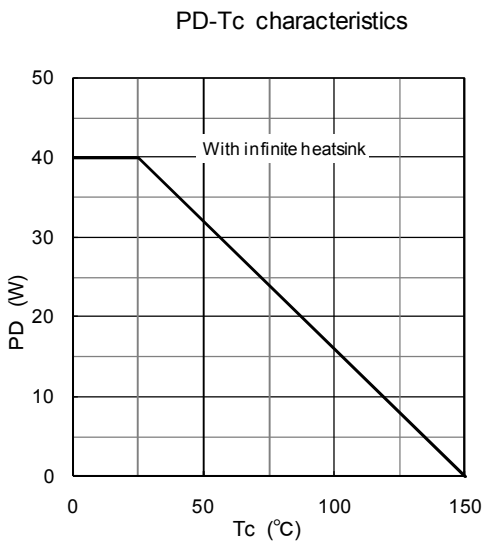
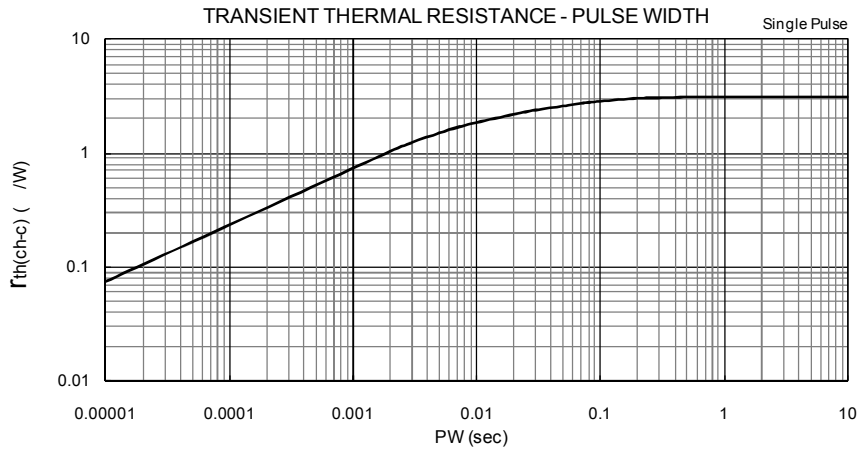
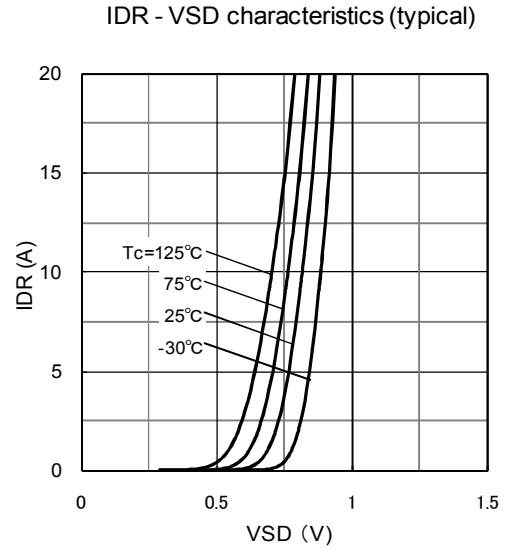
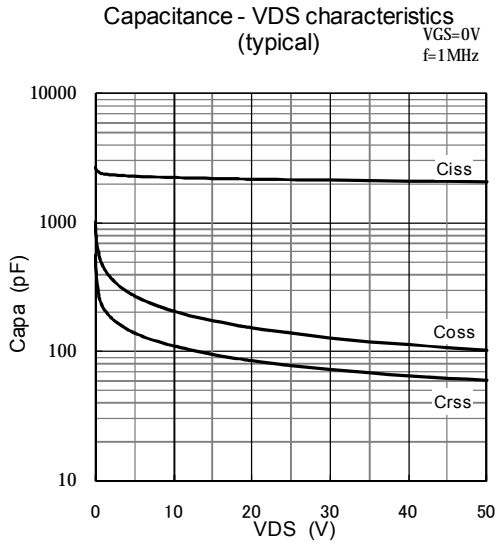


Re(yfs) - ID characteristics (typical)



The information included herein is believed to be accurate and reliable. However, SANKEN ELECTRIC CO., LTD assumes no responsibility for its use ; nor for any infringements of patents or other rights of third parties that may result from its use.

Characteristic Curves (Tc=25°C)



The information included herein is believed to be accurate and reliable. However, SANKEN ELECTRIC CO., LTD assumes no responsibility for its use ; nor for any infringements of patents or other rights of third parties that may result from its use.

DKG1020

Aug. 2011

Fig.1 Unclamped Inductive Test Method

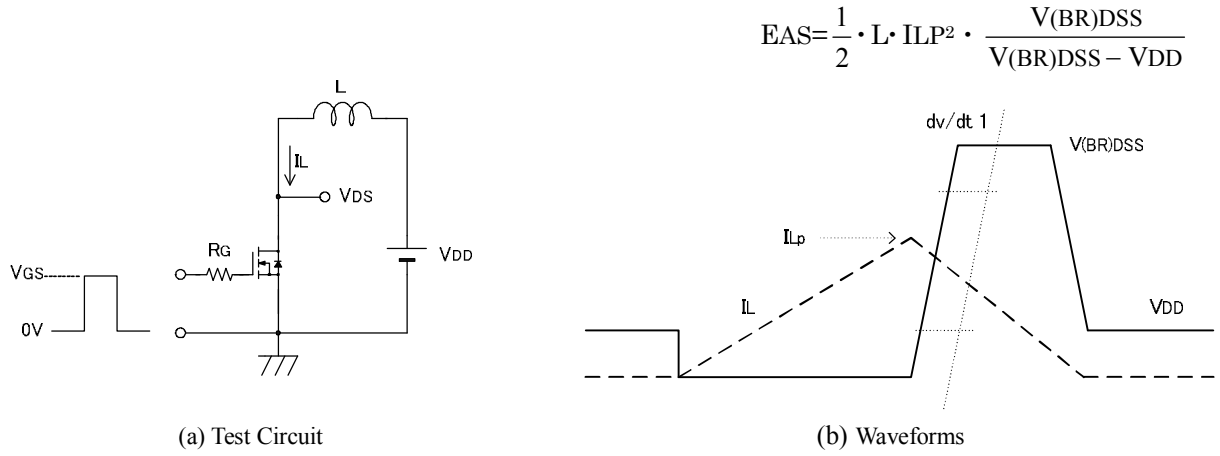


Fig.2 Diode Reverse Recovery Time Test Method

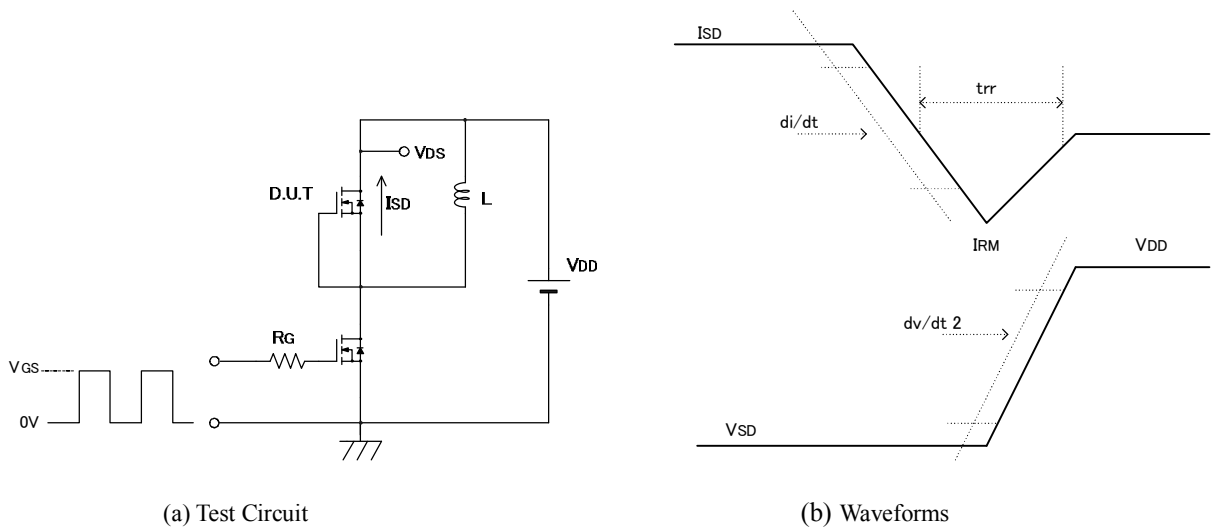
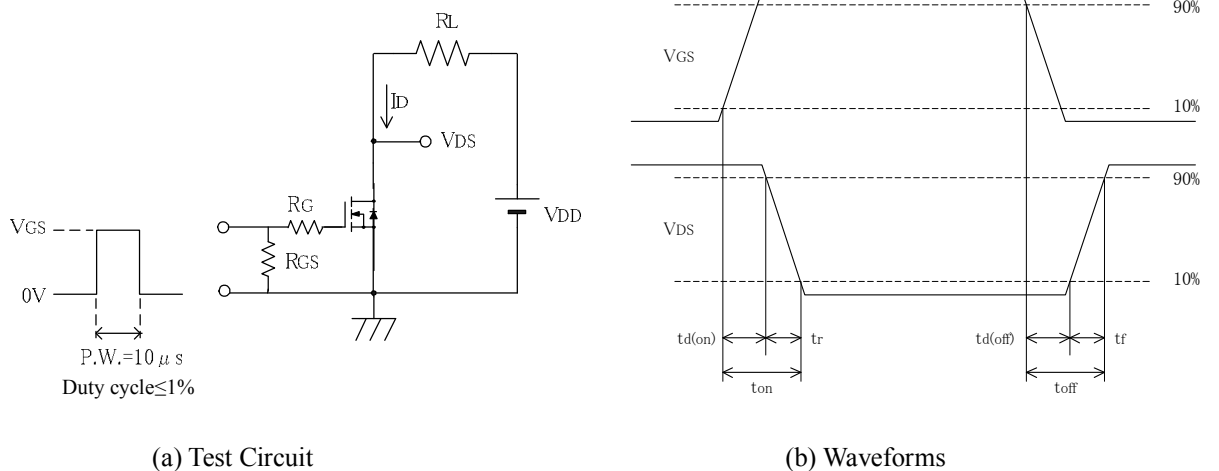


Fig.3 Switching Time Test Method



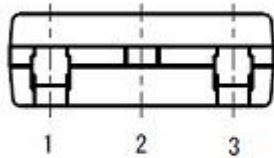
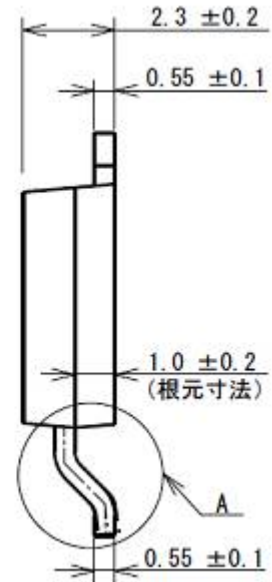
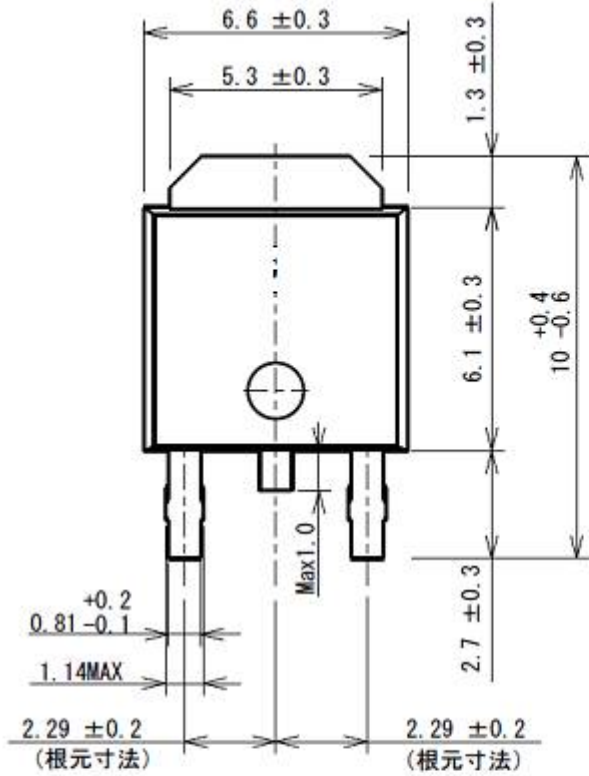
The information included herein is believed to be accurate and reliable. However, SANKEN ELECTRIC CO., LTD assumes no responsibility for its use ; nor for any infringements of patents or other rights of third parties that may result from its use.

DKG1020

Aug. 2011

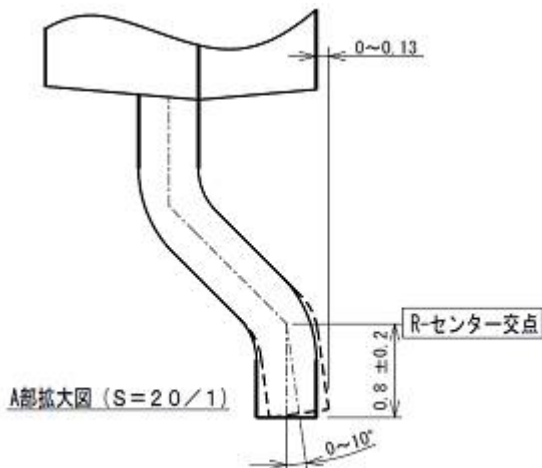
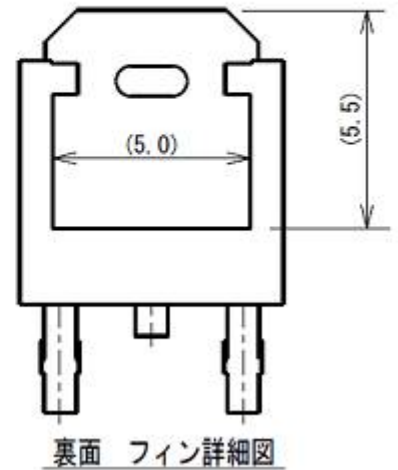
Outline

TO252



Pin assignment

- (1) Gate
- (2) Drain
- (3) Source



Weight Approx.0.33g