

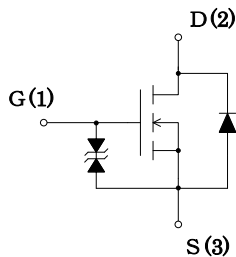
Features

- Low on-state resistance 5.0mΩ VGS=10V
- Built-in gate protection diode
- SMD PKG

Applications

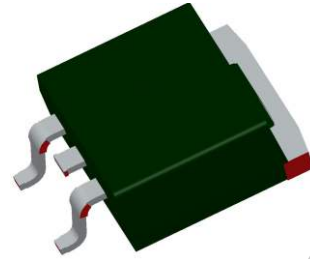
- DC-DC converter
- Mortar drive

Internal Equivalent Circuit



Package

TO220S



Key Specifications

- V(BR)DSS = 60V (ID=100uA)
- RDS(ON) = 5mΩ max (ID=35A/VGS=10V)

Absolute maximum ratings

(Ta=25°C)

Characteristic	Symbol	Rating	Unit
Drain to Source Voltage	V _{DSS}	60	V
Gate to Source Voltage	V _{GSS}	±20	V
Continuous Drain Current	I _D	±85	A
Pulsed Drain Current	I _{D(pulse)} *1	±170	A
Maximum Power Dissipation	P _D	100 (Tc=25°C)	W
Single Pulse Avalanche Energy	E _{AS} *2	400	mJ
Maximum avalanche current	I _{AS}	25	A
Channel Temperature	T _{ch}	150	°C
Storage Temperature	T _{stg}	-55 ~ +150	°C
Maximum Drain to Source dv/dt 1	dv/dt 1 *2	0.5	V/ns
Peak diode recovery dv/dt 2	dv/dt 2 *3	3	V/ns
Peak diode recovery di/dt	di/dt *3	100	A/μs

*1 PW≤100μsec. duty cycle≤1%

*2 V_{DD}=20V, L=1mH, I_L=25A, unclamped, R_g=50Ω, See Fig.1

*3 I_{SD}=25A, See Fig.2

Electrical characteristics

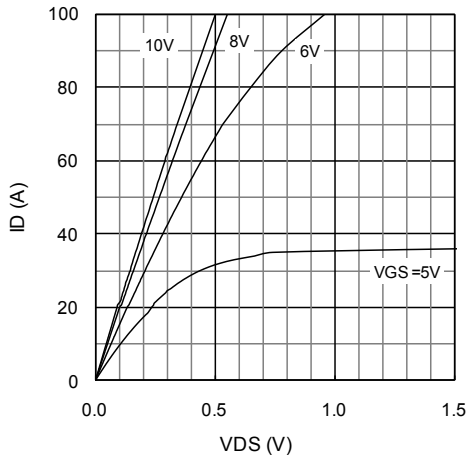
(Ta=25°C)

Characteristic	Symbol	Test Conditions	Limits			Unit
			MIN	TYP	MAX	
Drain to Source breakdown Voltage	$V_{(BR)DSS}$	$I_D=100\mu A$ $V_{GS}=0V$	60			V
Gate to Source Leakage Current	I_{GSS}	$V_{GS}=\pm 15V$			± 10	μA
Drain to Source Leakage Current	I_{DSS}	$V_{DS}=60V$ $V_{GS}=0V$			100	μA
Gate Threshold Voltage	V_{TH}	$V_{DS}=10V$, $I_D=1mA$	2.0	3.4	4.0	V
Forward Transconductance	$Re(yfs)$	$V_{DS}=10V$ $I_D=35A$	30	80		S
Static Drain to Source On-Resistance	$R_{DS(ON)}$	$I_D=35A$, $V_{GS}=10V$		5.0	6.0	m Ω
Input Capacitance	C_{iss}	$V_{DS}=10V$ $V_{GS}=0V$ $f=1MHz$		8400		pF
Output Capacitance	C_{oss}			1200		
Reverse Transfer Capacitance	C_{rss}			930		
Turn-On Delay Time	$t_{d(on)}$	$I_D=35A$ $V_{DD}=20V$ $R_G=22\Omega$ $R_{GS}=50\Omega$ $R_L=0.57\Omega$ $V_{GS}=10V$ See Fig.3		160		ns
Rise Time	t_r			170		
Turn-Off Delay Time	$t_{d(off)}$			430		
Fall Time	t_f			185		
Source-Drain Diode Forward Voltage	V_{SD}	$I_{SD}=50A$ $V_{GS}=0V$		0.9	1.5	V
Source-Drain Diode Reverse Recovery Time	t_{rr}	$I_{SD}=25A$ $di/dt=50A/\mu s$		65		ns
Thermal Resistance Junction to Case	$R_{th(ch-c)}$				1.25	$^{\circ}C/W$
Thermal Resistance Junction to Ambient	$R_{th(ch-a)}$				62.5	$^{\circ}C/W$

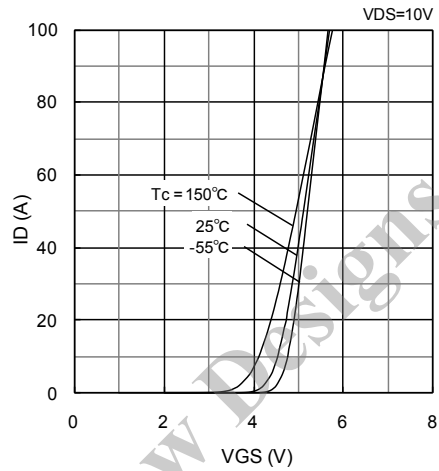
The information included herein is believed to be accurate and reliable. However, SANKEN ELECTRIC CO., LTD assumes no responsibility for its use ; nor for any infringements of patents or other rights of third parties that may result from its use.

Characteristic Curves (Tc=25°C)

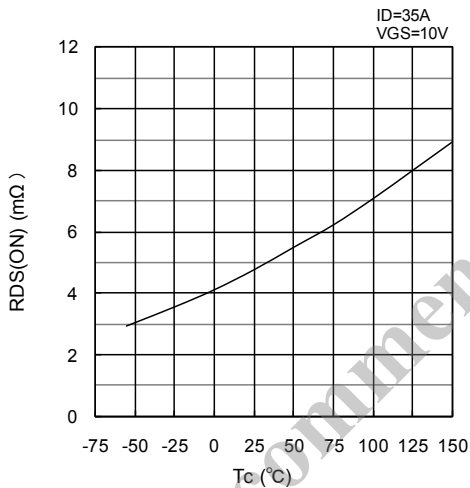
ID-VDS characteristics (typical)



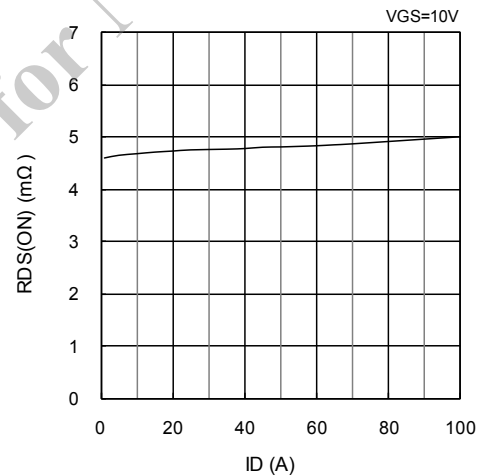
ID-VGS characteristics (typical)



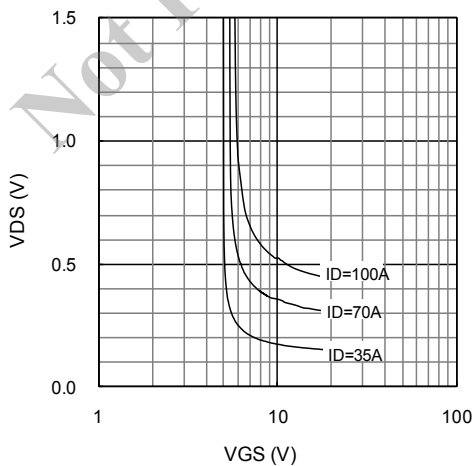
RDS(ON)-Tc characteristics (typical)



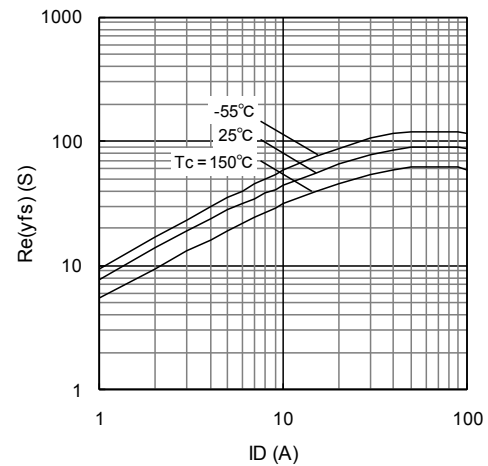
RDS(ON)-ID characteristics (typical)



VDS-VGS characteristics (typical)

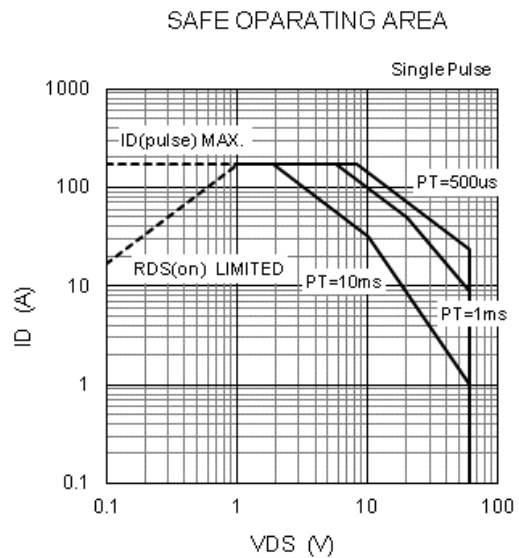
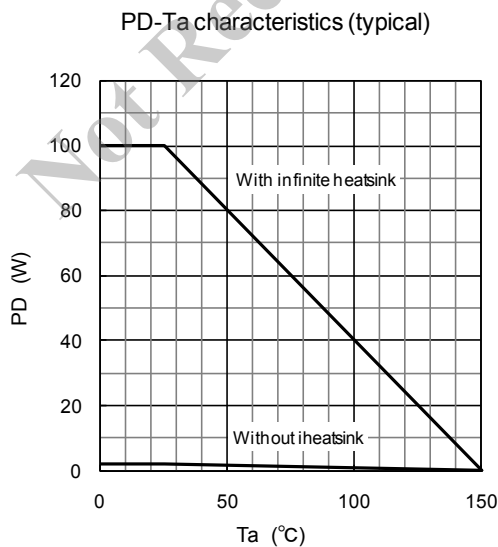
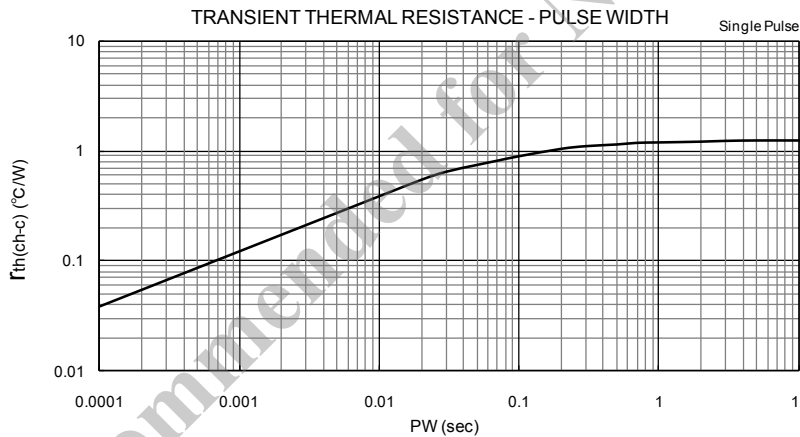
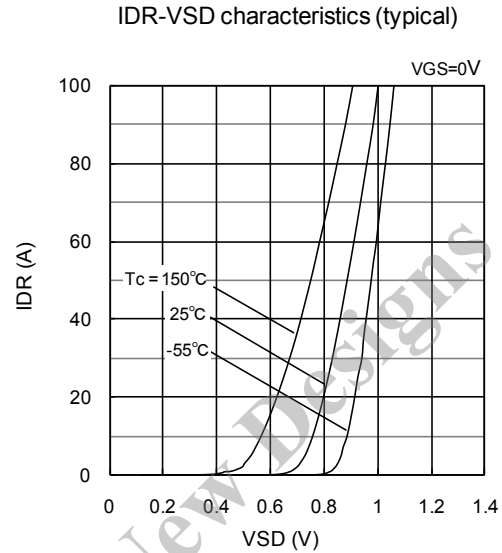
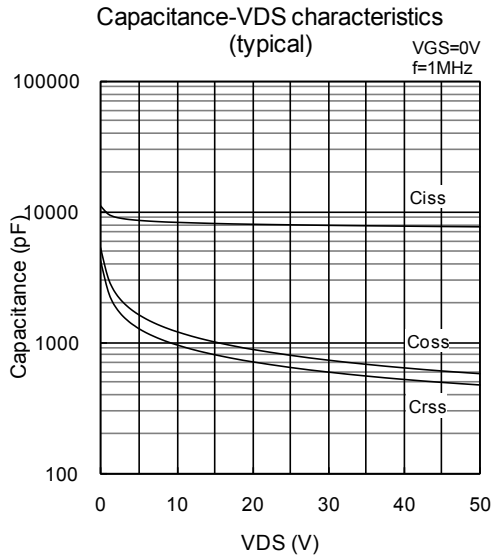


Re(yfs)-ID characteristics (typical)



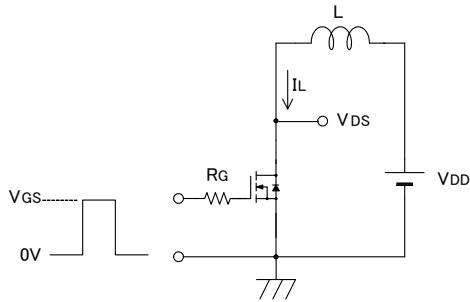
The information included herein is believed to be accurate and reliable. However, SANKEN ELECTRIC CO., LTD assumes no responsibility for its use ; nor for any infringements of patents or other rights of third parties that may result from its use.

Characteristic Curves (Tc=25°C)



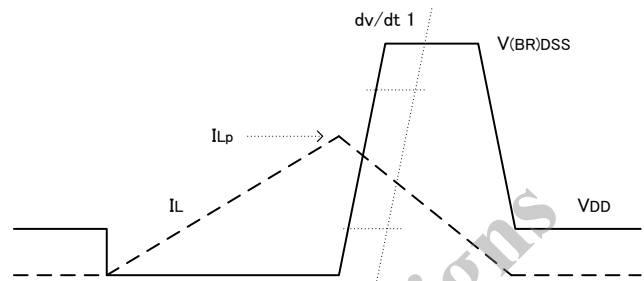
The information included herein is believed to be accurate and reliable. However, SANKEN ELECTRIC CO., LTD assumes no responsibility for its use ; nor for any infringements of patents or other rights of third parties that may result from its use.

Fig.1 Unclamped Inductive Test Method



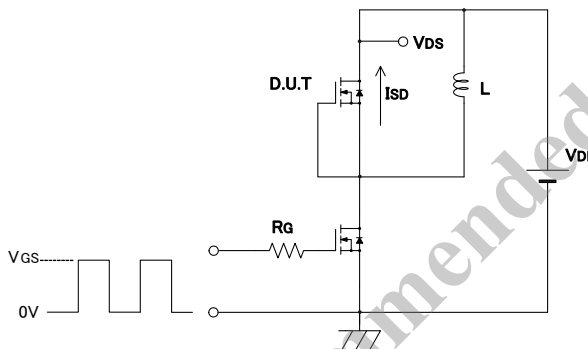
(a) Test Circuit

$$EAS = \frac{1}{2} \cdot L \cdot I_{LP}^2 \cdot \frac{V_{(BR)DSS}}{V_{(BR)DSS} - V_{DD}}$$

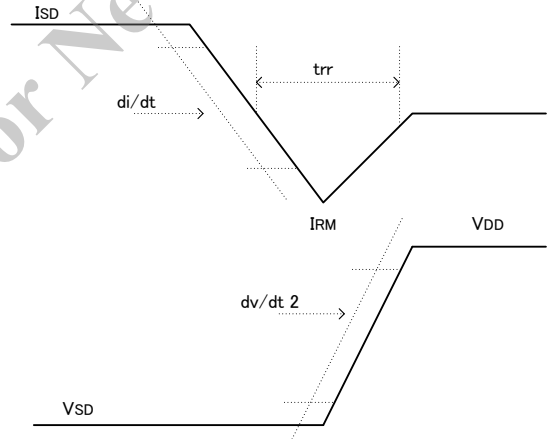


(b) Waveforms

Fig.2 Diode Reverse Recovery Time Test Method

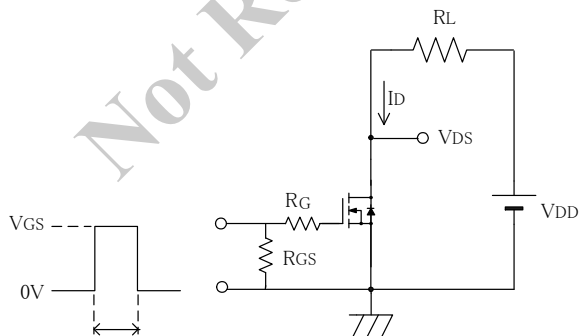


(a) Test Circuit

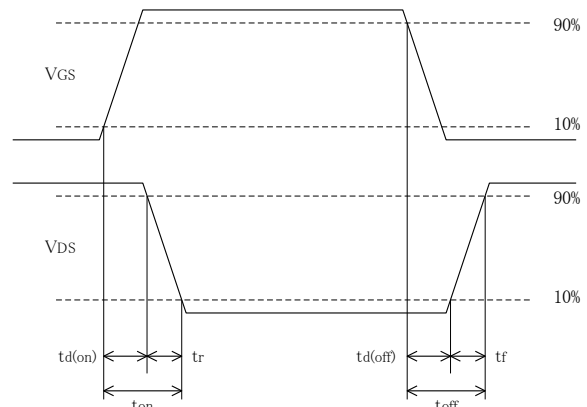


(b) Waveforms

Fig.3 Switching Time Test Method



(a) Test Circuit

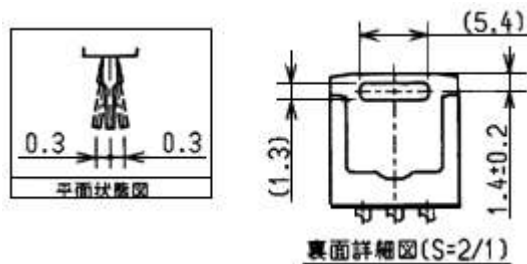
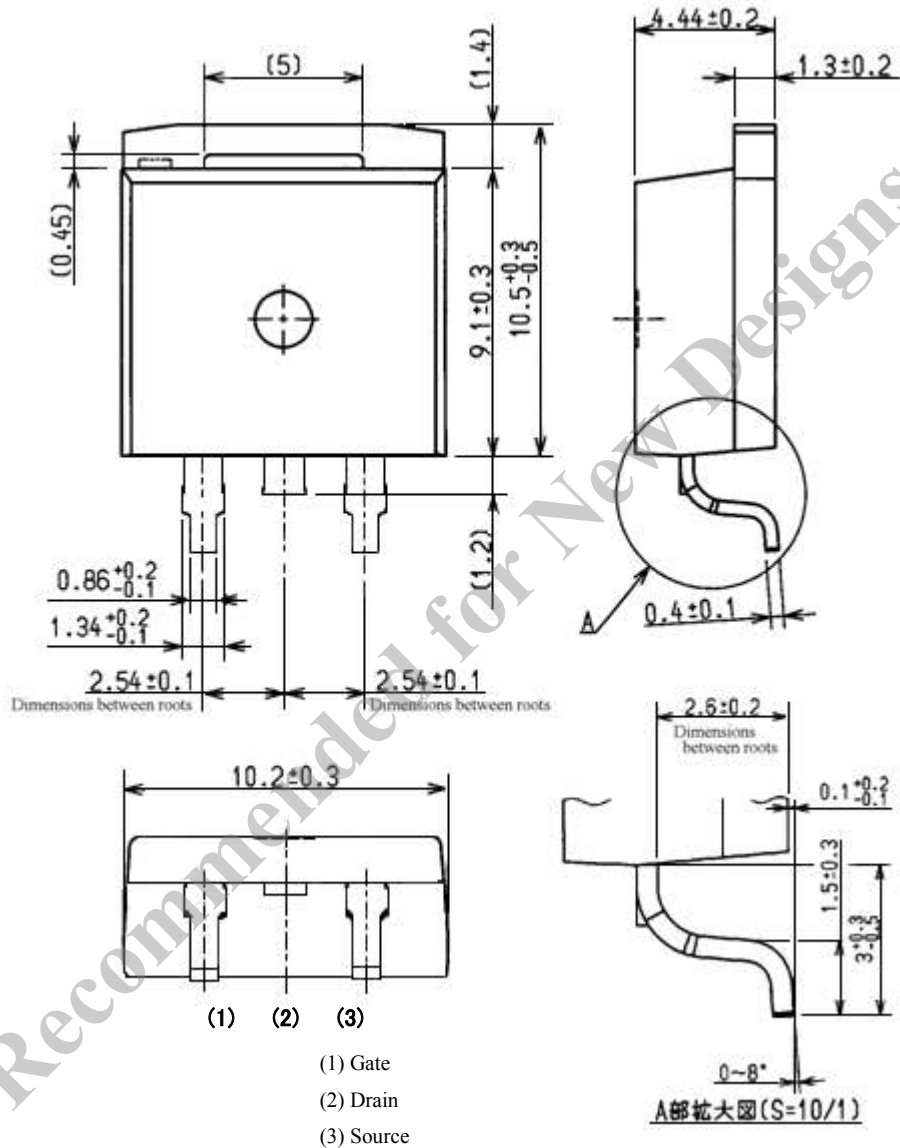


(b) Waveforms

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.

Outline

TO220S



Weight Approx. 1.4g

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.