

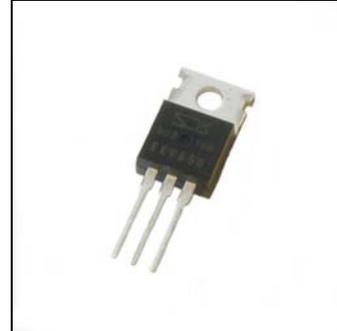
■Features

- Low on-resistance
- Avalanche energy capability guaranteed
- Built-in Gate protection diode against electrostatic discharge (ESD)

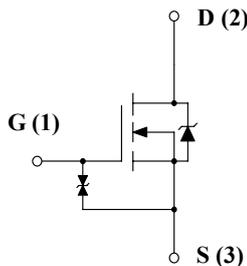
■Applications

- DC-DC Converters
- High speed switching

■Package—TO-220



■Equivalent circuit



**Absolute maximum ratings**

(Ta=25°C)

Parameter	Symbol	Rating	Unit
Drain to Source Voltage	VDSS	50	V
Gate to Source Voltage	VGSS	±20	V
Continuous Drain Current	ID	±50A	A
Pulsed Drain Current	ID(pulse) <sup>1)</sup>	±150A	A
Maximum Power Dissipation	PD	85 (Tc=25°C)	W
Single Pulse Avalanche Energy	EAS <sup>2)</sup>	150	mJ
Avalanche Current	IAS	20	A
Channel Temperature	Tch	150	°C
Storage Temperature	Tstg	-55 to 150	°C

1) PW≤100μs, duty cycle≤1%

2) VDD=20V,L=72μH, ILp=50A, unclamped, RG=50Ω. See Fig.1

50V N-ch MOSFET  
**EKV550**



January, 2006

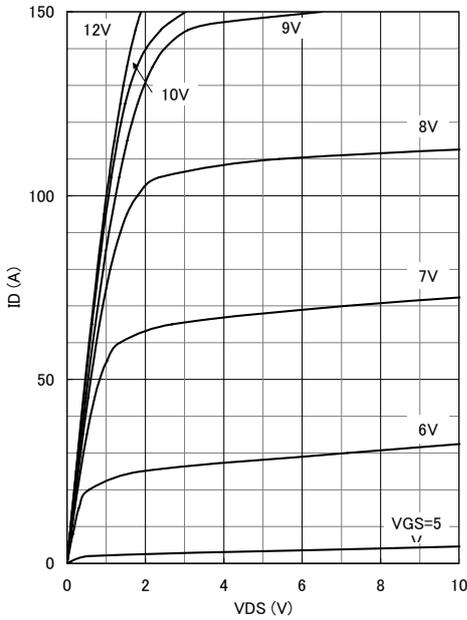
**Electrical characteristics**

(Ta=25°C)

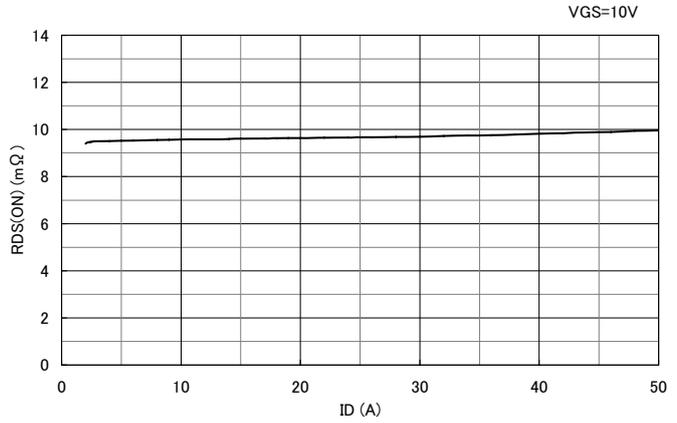
Parameter	Symbol	Test Conditions	Limits			Unit
			MIN.	TYP.	MAX.	
Drain to Source breakdown Voltage	V(BR)DSS	ID=100μA, VGS=0V	250			V
Gate to Source Leakage Current	IGSS	VGS=±20V			±10	μA
Drain to Source Leakage Current	IDSS	VDS=50V, VGS=0V			100	μA
Gate Threshold Voltage	VTH	VDS=10V, ID=250μA	3.0		4.2	V
Forward Transconductance	Re(Yfs)	VDS=10V, ID=25A	17			S
Static Drain to Source On-Resistance	RDS(on)	ID=25A, VGS=10V		12	15	mΩ
Input Capacitance	Ciss	VDS=10V VGS=0V f=1MHz		2000		pF
Output Capacitance	Coss			1200		
Reverse Transfer Capacitance	Crss			500		
Turn-On Delay Time	td(on)	ID=25A, VDD≈25V RL=1Ω, VGS=10V RG=10Ω See Fig.2		30		ns
Rise Time	tr			360		
Turn-Off Delay Time	td(off)			130		
Fall Time	tf			120		
Source-Drain Diode Forward Voltage	VSD	ISD=50A, VGS=0V		1.0	1.5	V

**Characteristic Curves (Tc=25°C)**

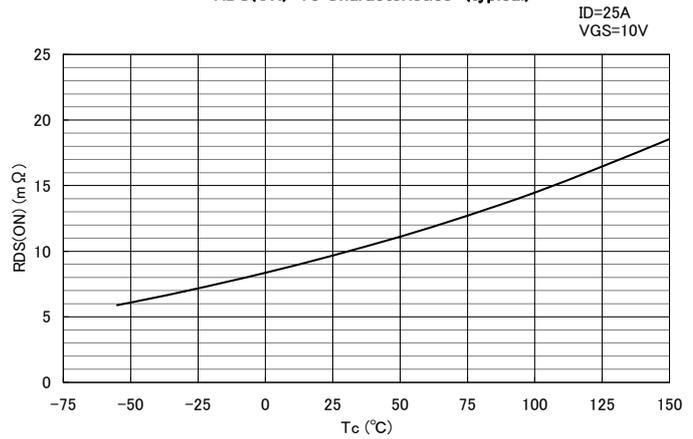
**ID-VDS Characteristics (typical)**



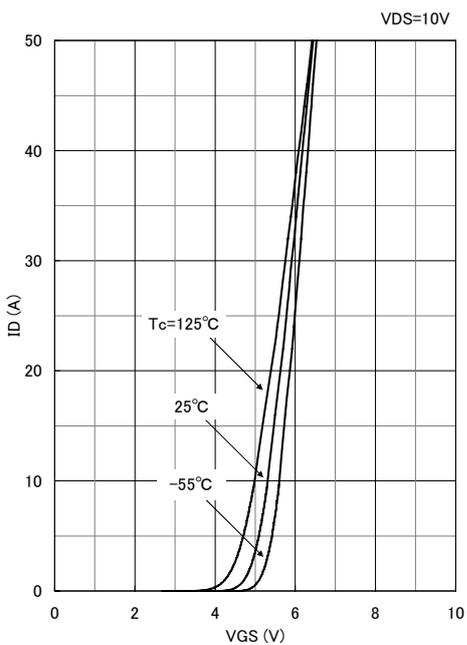
**RDS(ON)-ID Characteristics (typical)**



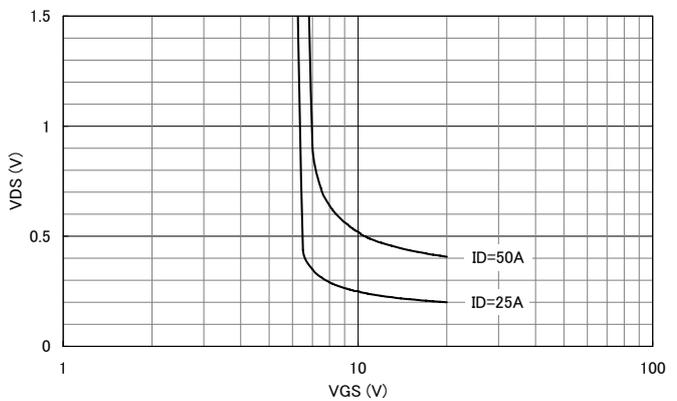
**RDS(ON)-Tc Characteristics (typical)**



**ID-VGS Characteristics (typical)**

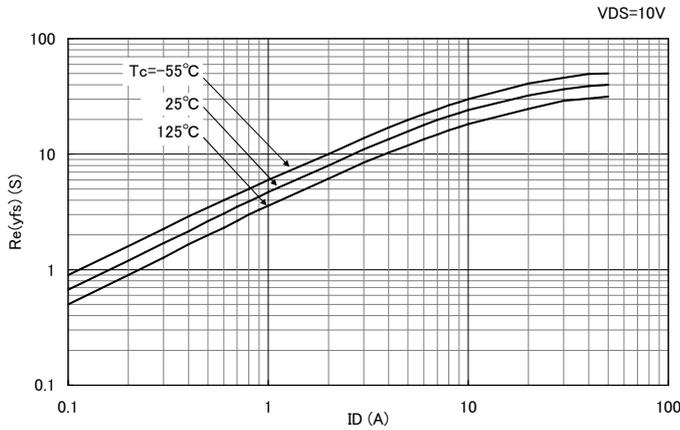


**VDS-VGS Characteristics (typical)**

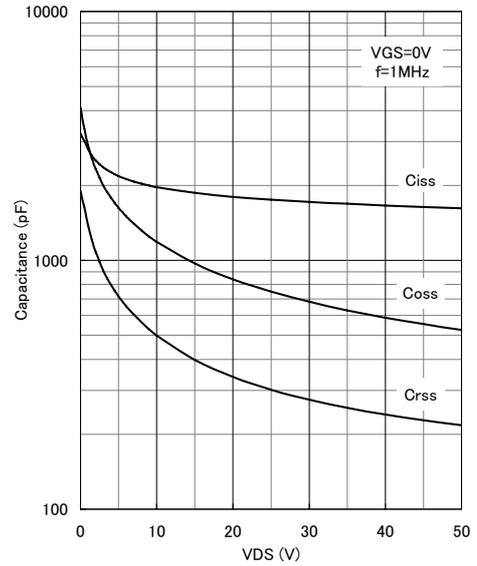


**Characteristic Curves (Tc=25°C)**

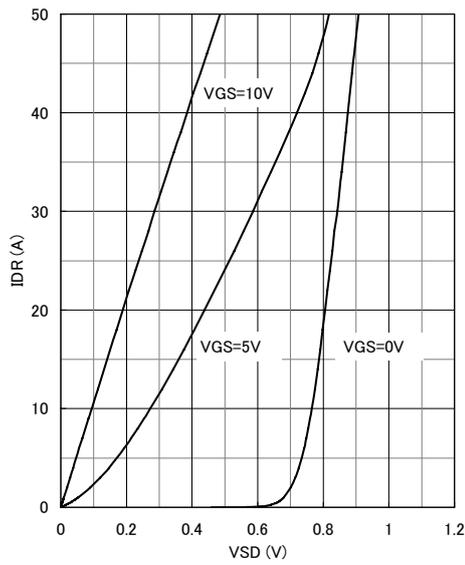
**Re(yfs)-ID Characteristics (typical)**



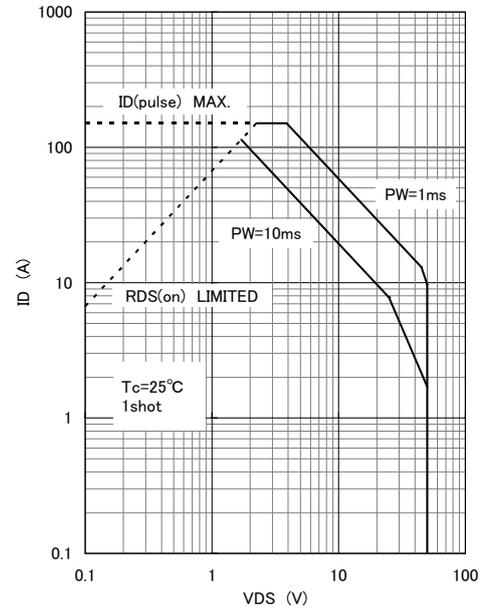
**Capacitance-VDS Characteristics (typical)**



**IDR-VDS Characteristics (typical)**



**SAFE OPERATING AREA**



**PD-Ta Characteristics**

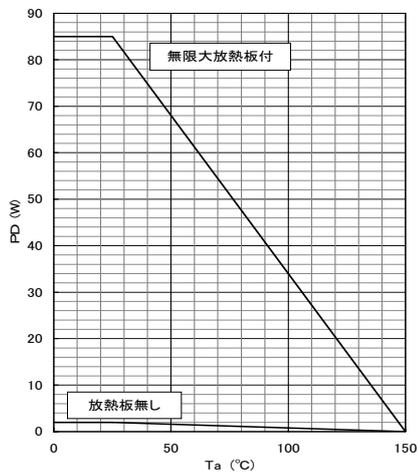


Fig.1 Unclamped Inductive Test Method

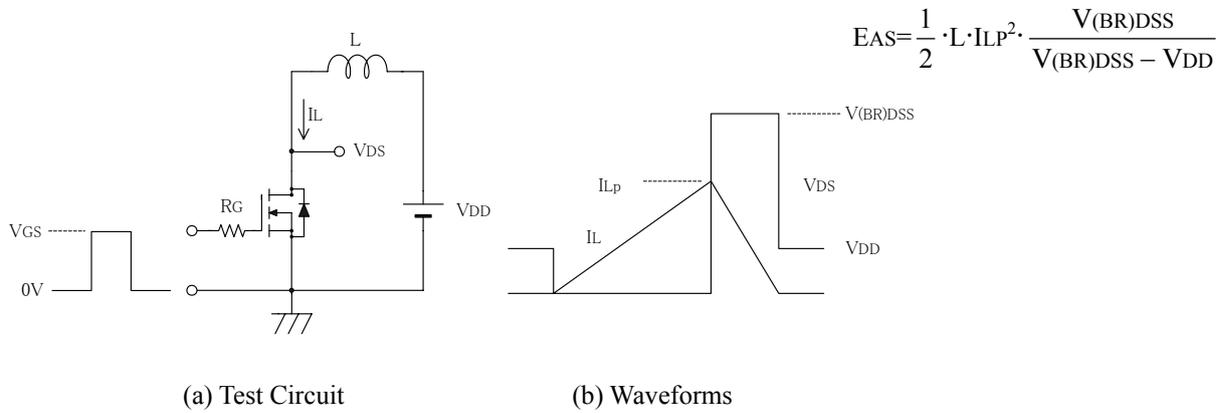
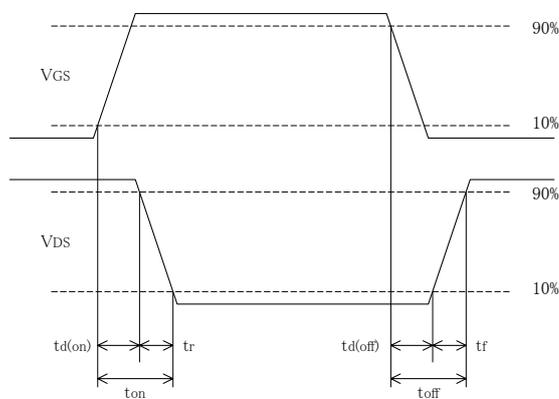
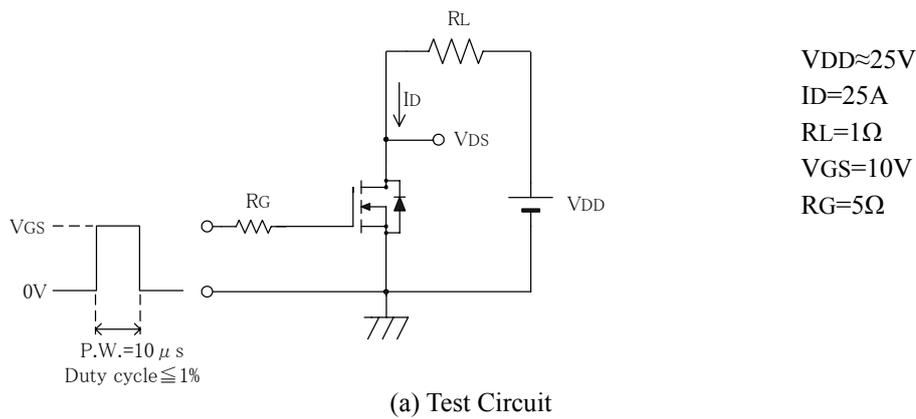


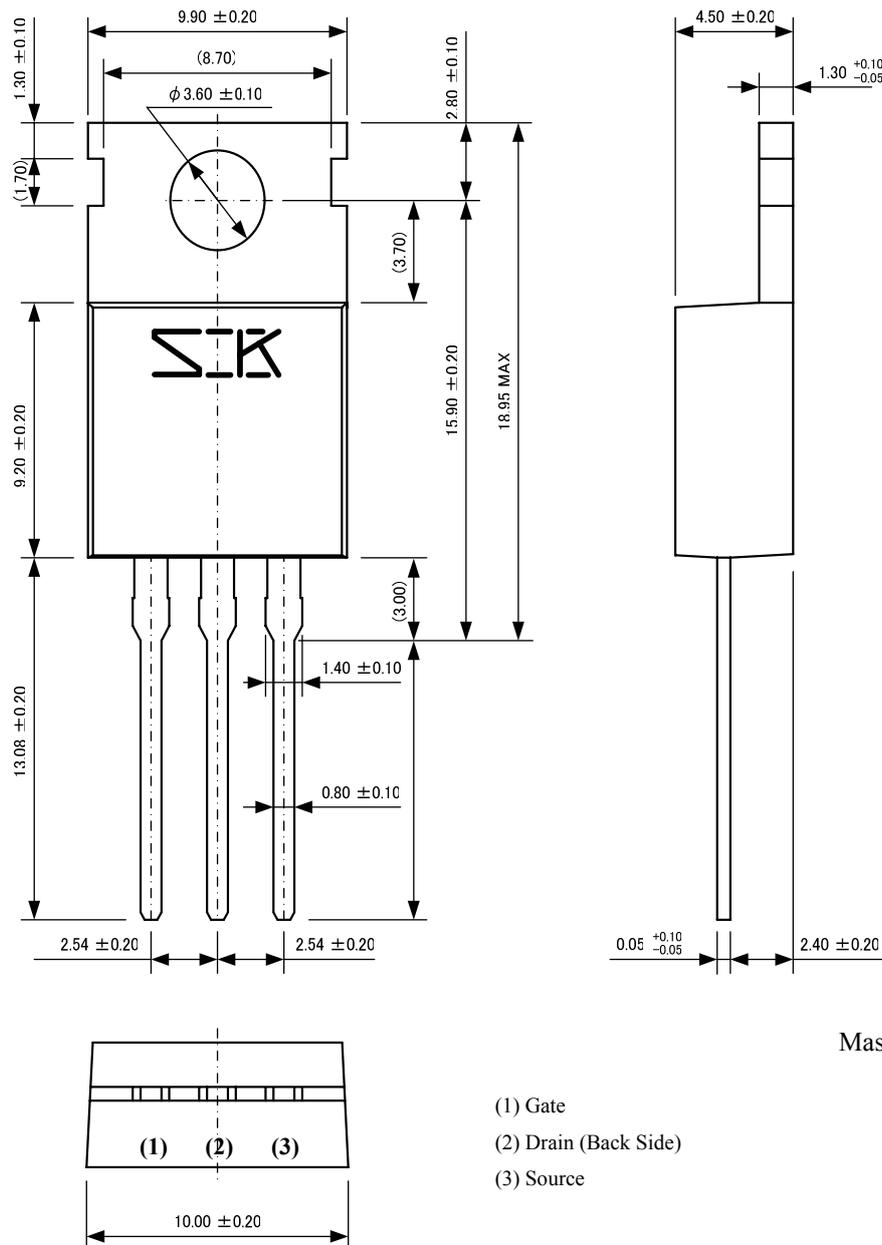
Fig.2 Switching Time Test Method



(b) Waveforms

External Dimensions

TO-220



Mass: Approx. 2.1g

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

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# EKV550

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