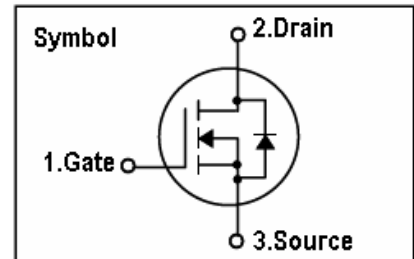


## ***N-Channel MOSFET Preliminary***

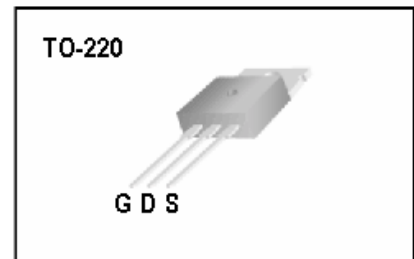
### **Features**

- 75V,73A,Rds(on)(typ)=11mΩ@Vgs=10V
- High Ruggedness
- Fast Switching
- 100% Avalanche Tested
- Improved dv/dt Capability



### **General Description**

This Power MOSFET is produced using KEDA's advanced Trench MOS Technology. This latest technology has been especially designed to minimize on-state resistance, have a high rugged avalanche characteristics. These devices are well suited for low voltage application such as automotive,DC/DC converters,and high efficiency switch for power management in portable and battery products.



### **Absolute Maximum Ratings**

Symbol	Parameter	Value	Units
V <sub>DSS</sub>	Drain-Source Voltage	75	V
I <sub>D</sub>	Continuous Drain Current (T <sub>C</sub> =25 °C)	73	A
	Continuous Drain Current (T <sub>C</sub> =100 °C)	50	A
I <sub>DM</sub>	Pulsed Drain Current (Note 1)	300	A
V <sub>GS</sub>	Gate-Source Voltage	± 30	V
E <sub>AS</sub>	Single Pulsed Avalanche Energy (Note 2)	288	mJ
P <sub>D</sub>	Maximum Power Dissipation (T <sub>C</sub> =25 °C)	230	W
	Derating Factor above 25 °C	1.5	W/°C
T <sub>J</sub>	Operating Junction Temperature Range	-55 to +150	°C
T <sub>STG</sub>	Storage Temperature Range	-55 to +150	°C

### **Thermal Characteristics**

Symbol	Parameter	Max.	Units
R <sub>th j-c</sub>	Thermal Resistance, Junction to case	0.65	°C/ W
R <sub>th c-s</sub>	Thermal Resistance, Case to Sink	0.5	°C/ W
R <sub>th j-a</sub>	Thermal Resistance, Junction to Ambient	62.5	°C/ W

## Electrical Characteristics ( $T_C=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	75	-	-	V
$I_{DSS}$	Drain-Source Leakage Current	$V_{DS}=75V, V_{GS}=0V$	-	-	250	$\mu A$
$I_{GSS}$	Gate Leakage Current, Forward	$V_{GS}=30V, V_{DS}=0V$	-	-	100	nA
	Gate Leakage Current, Reverse	$V_{GS}=-30V, V_{DS}=0V$	-	-	-100	nA
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}, I_D=250\mu A$	2	-	4	V
$R_{DS(on)}$	Drain-Source On-State Resistance	$V_{GS}=10V, I_D=36A$	-	11	13	m $\Omega$
$Q_g$	Total Gate Charge	$V_{DD}=60V$ $V_{GS}=10V$ $I_D=73A$ (Note 3)	-	85	-	nC
$Q_{gs}$	Gate-Source Charge		-	21	-	nC
$Q_{gd}$	Gate-Drain Charge		-	35	-	nC
$t_{d(on)}$	Turn-on Delay Time	$V_{DD}=37.5V, V_{GS}=10V$ $I_D=45A, R_G=4.7\Omega$ $T_C=25^\circ\text{C}$ (Note 3)	-	23	-	ns
$t_r$	Turn-on Rise Time		-	56	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	32	-	ns
$t_f$	Turn-off Fall Time		-	21	-	ns
$C_{iss}$	Input Capacitance	$V_{DS}=25V$ $V_{GS}=0V$ $f = 1\text{MHz}$	-	2844	-	pF
$C_{oss}$	Output Capacitance		-	357	-	pF
$C_{rss}$	Reverse Transfer Capacitance		-	180	-	pF

## Source-Drain Diode Characteristics ( $T_C=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
$I_S$	Continuous Source Diode Forward Current		-	-	73	A
$I_{SM}$	Pulsed Source Diode Forward Current (Note 1)		-	-	292	A
$V_{SD}$	Forward On Voltage	$V_{GS}=0V, I_S=45A$	-	-	1.5	V
$t_{rr}$	Reverse Recovery Time	$V_{GS}=0V, I_S=45A$ $di_F/dt = 100A/\mu s$	-	80	150	ns
$Q_{rr}$	Reverse Recovery Charge		-	328	650	nC

### Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature
2.  $L=0.28\text{mH}$ ,  $I_{AS}=26A$ ,  $V_{DD}=50V$ ,  $R_G=25\Omega$ , Starting  $T_J=25^\circ\text{C}$
3. Pulse Width  $\leq 300\ \mu s$ ; Duty Cycles  $\leq 2\%$

## Test Circuits and Waveform

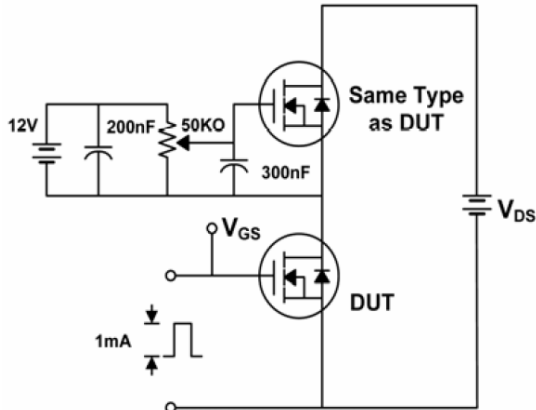


Fig.1 Gate Charge Test Circuit

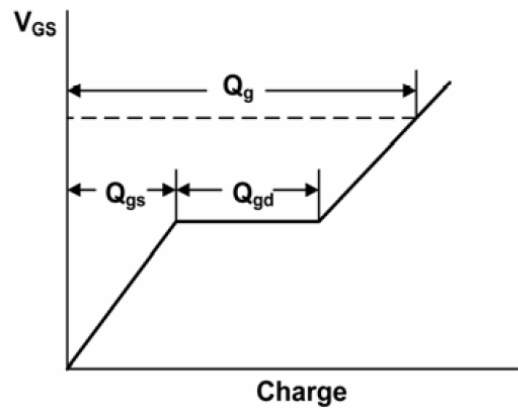


Fig.2 Gate Charge Waveform

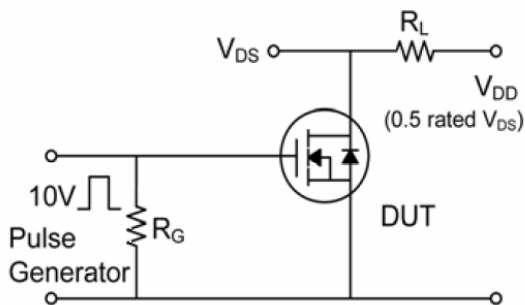


Fig.3 Switching time Test Circuit

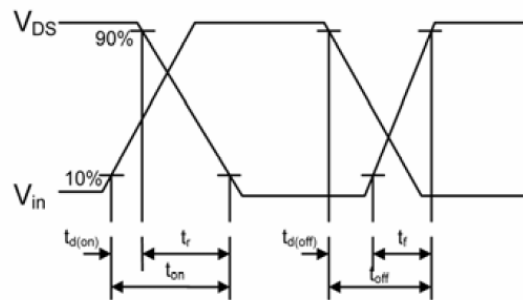


Fig.4 Switching time Waveform

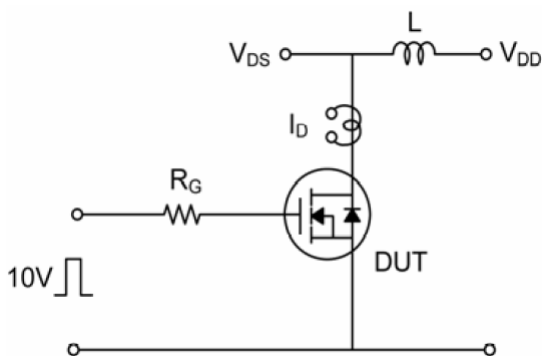


Fig.5 Unclamped Inductive Switching Test Circuit

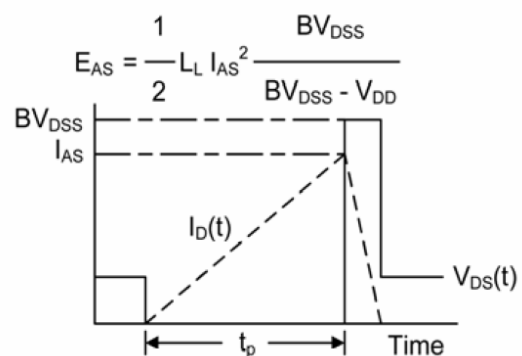


Fig.6 Unclamped Inductive Switching Waveform

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