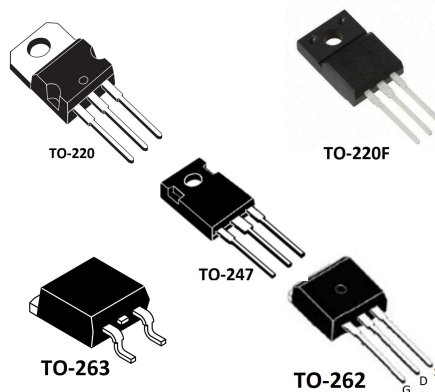


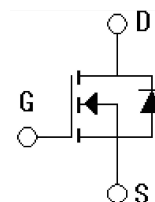
## Features

- Low gate charge
- Low  $C_{RSS}$  (typ 9pF)
- Fast switchin
- 100% avalanche tested
- Improved dv/dt capability
- RoHS product



## Applications

- High frequency switching mode power supply
- Electronic ballast
- UPS



## Absolute Ratings (Tc=25°C)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	$V_{DSS}$	1000	V
Drain Current-continuous	$I_D$ T=25°C T=100°C	8	A
		5	A
Drain Current-pulse (note 1)	$I_{DM}$	32*	A
Gate-Source Voltage	$V_{GS}$	±30	V
Single pulse avalanche energy(note 2)	$E_{AS}$	650	mJ
Avalanche Current (note 1)	$I_{AR}$	8	A
Repetitive Avalanche Energy(note 1)	$E_{AR}$	393	mJ
Power Dissipation (TO-220\TO-247)	PD TC=25°C Derate above 25°C	167	W
		1.43	W/°C
Power Dissipation (TO-263\TO-262)	PD TC=25°C Derate above 25°C	83	W
		0.34	W/°C
Power Dissipation (TO-220F)	PD TC=25°C Derate above 25°C	31.7	W
		0.25	W/°C
Operating and Storage Temperature Range	$T_J, T_{STG}$	-55~+150	°C

Peak Diode Recovery dv/dt (note 3)	dv/dt	4.5	V/ns
Maximum Lead Temperature for Soldering Purposes	T <sub>L</sub>	300	°C

\*Drain current limited by maximum junction temperature

## Electrical Characteristics(T<sub>CASE</sub>=25°C unless otherwise specified)

Parameter	Symbol	Tests conditions	Min	Type	Max	Units
Drain-Source Voltage	BV <sub>DSS</sub>	I <sub>D</sub> =250μA, V <sub>GS</sub> =0V	1000	-	-	V
Breakdown Voltage Temperature Coefficient	ΔBV <sub>DSS</sub> /ΔT <sub>J</sub>	I <sub>D</sub> =250μA, referenced to 25°C	-	1.05	-	V/°C
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =1000V, V <sub>GS</sub> =0V, T <sub>C</sub> =25°C	-	-	1	μA
		V <sub>DS</sub> =800V, T <sub>C</sub> =125°C	-	-	10	μA
Gate body leakage current	I <sub>GSS</sub>	V <sub>DS</sub> =0V, V <sub>GS</sub> =±30V	-	-	±100	nA

### On-Characteristics

Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	3.0	-	5.0	V
Static Drain-Source On-Resistance	R <sub>DS(ON)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =4A	-	1.8	2.3	Ω
Forward Transconductance	g <sub>FS</sub>	V <sub>DS</sub> =40V, I <sub>D</sub> =4A (note 4)	-	5.6	-	S

### Dynamic Characteristics

Input capacitance	C <sub>iss</sub>	V <sub>DS</sub> =25V, V <sub>GS</sub> =0V, f=1.0MHZ	-	687	-	pF
Output capacitance	C <sub>oss</sub>		-	67	-	pF
Reverse transfer capacitance	C <sub>rss</sub>		-	12	-	pF

## Electrical Characteristics(T<sub>CASE</sub>=25°C unless otherwise specified)

Parameter	Symbol	Tests conditions	Min	Type	Max	Units
<b>Switching-Characteristics</b>						
Turn-On delay time	t <sub>d(on)</sub>	V <sub>DD</sub> =500V, I <sub>D</sub> =8A, R <sub>GEN</sub> =25Ω (note 4,5)	-	13	-	ns
Turn-On rise time	t <sub>r</sub>		-	22	-	ns
Turn-Off delay time	t <sub>d(off)</sub>		-	63	-	ns
Turn-Off rise time	t <sub>f</sub>		-	19	-	ns

Total Gate Charge	$Q_g$	$V_{DS}=750V, I_D=4A,$ $V_{GS}=10V$ (note 4,5)	-	14	-	nC
Gate-Source charge	$Q_{gs}$		-	4	-	nC
Gate-Drain charge	$Q_{gd}$		-	5	-	nC
<b>Drain-Source Diode Characteristics and Maximum Ratings</b>						
Diode Forward Voltage (note 3)	$V_{SD}$	$V_{GS}=0V, I_S=8A$	-	-	1.4	V
Maximum Pulsed Drain-Source Diode Forward Current	$I_{SM}$	-	-	-	24	A
Maximum Continuous Drain Source Diode Forward Current	$I_S$	-	-	-	8	A
Reverse recovery time	$t_{rr}$	$V_{GS}=0V,$ $I_S=4A \text{ di}/dt=100A/\mu s$	-	159	-	ns
Reverse recovery charge	$Q_{rr}$	$T_c=25^\circ C$ (note 4)	-	693	-	nC
Reverse recovery time	$t_{rr}$	$V_{GS}=0V,$ $I_S=3A \text{ di}/dt=100A/\mu s$	-	153	-	ns
Reverse recovery charge	$Q_{rr}$	$T_c=100^\circ C$ (note 4)	-	685	-	nC

## Thermal Characteristic

Parameter	Symbol	Value			Unit
		TO-220/ TO-247	TO-263/ TO-262	TO-220F	
Thermal Resistance, junction to Case	$R_{th(j-C)}$	0.78	3	3.94	$^\circ C/W$
Thermal Resistance, Junction to Ambient	$R_{th(j-A)}$	62.5	65	80	$^\circ C/W$

### Order Message

Marking	Package
SL8N100K	TO-263
SL8N100H	TO-262
SL8N100F	TO-220F
SL8N100	TO-220
SL8N100T	TO-247

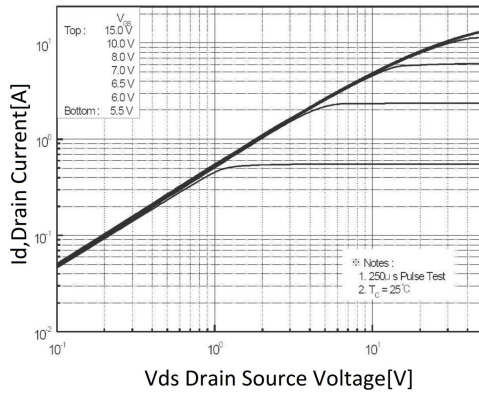
### Notes:

1. Pulse width limited by maximum junction temperature
2.  $L=33.0mH, I_{AS}=8A, V_{DD}=50V, R_G=25 \Omega, \text{Starting } T_J=25^\circ C$
3.  $I_{SD} \leq 8A, di/dt \leq 200A/\mu s, V_{DD} \leq BV_{DSS}, \text{Starting } T_J=25^\circ C$
4. Pulse Test: Pulse Width  $\leq 300\mu s, \text{Duty Cycle} \leq 2\%$

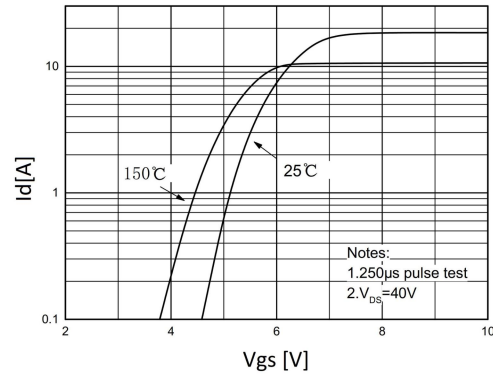
5. Essentially independent of operating temperature

## ELECTRICAL CHARACTERISTICS (curves)

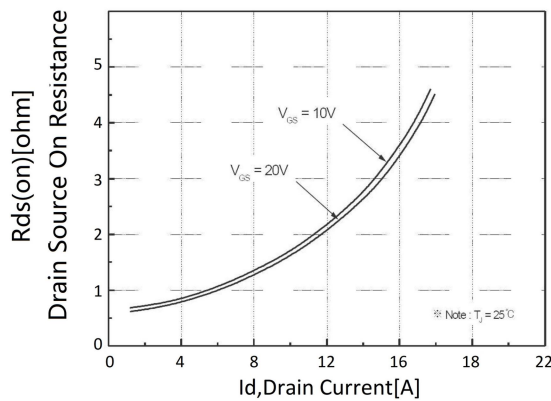
### On-Region Characteristics



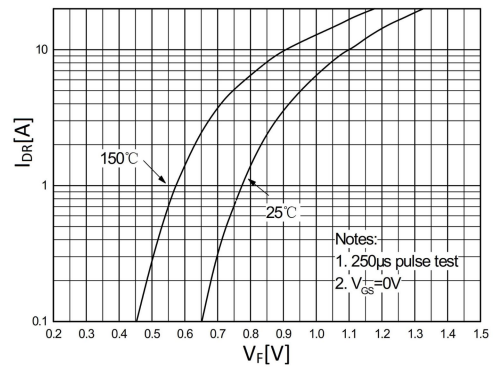
### Transfer Characteristics



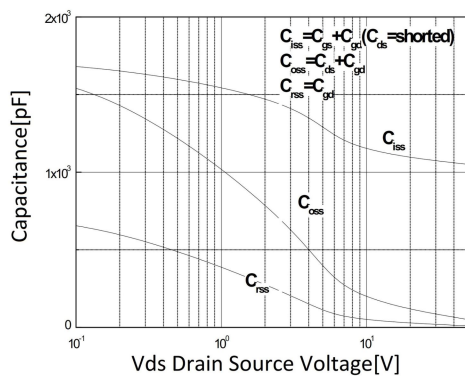
### On-Resistance Variation vs. Drain Current and Gate Voltage



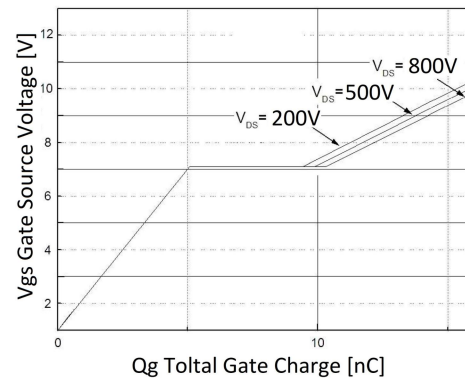
### Body Diode Forward Voltage Variation vs. Source Current and Temperature



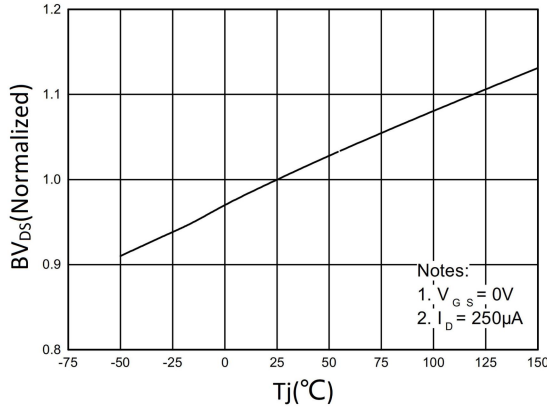
### Capacitance Characteristics



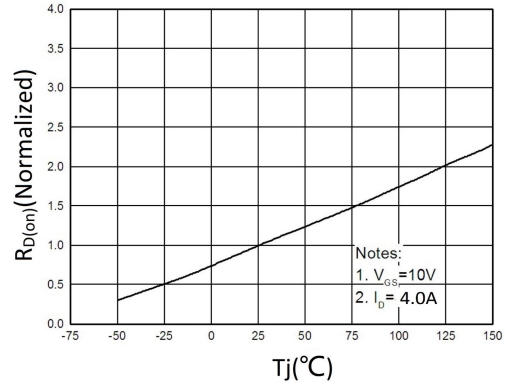
### Gate Charge Characteristics



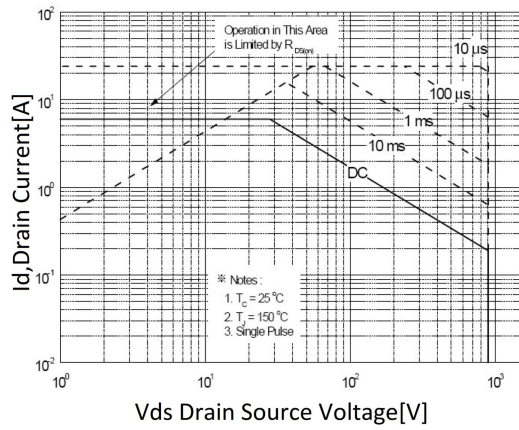
### Breakdown Voltage Variation vs. Temperature



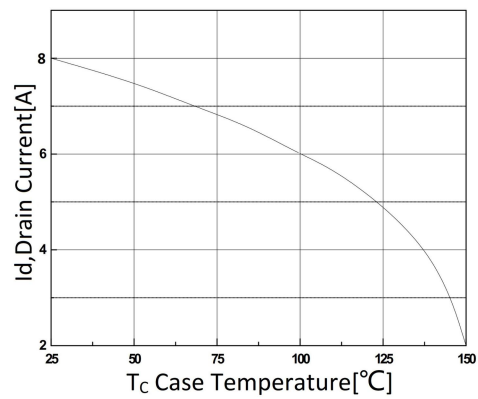
### On-Resistance Variation vs. Temperature



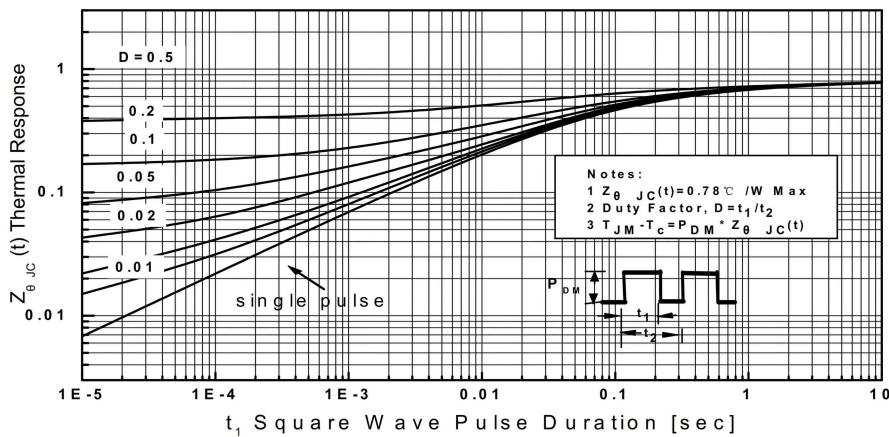
### Maximum Safe Operating Area



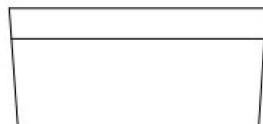
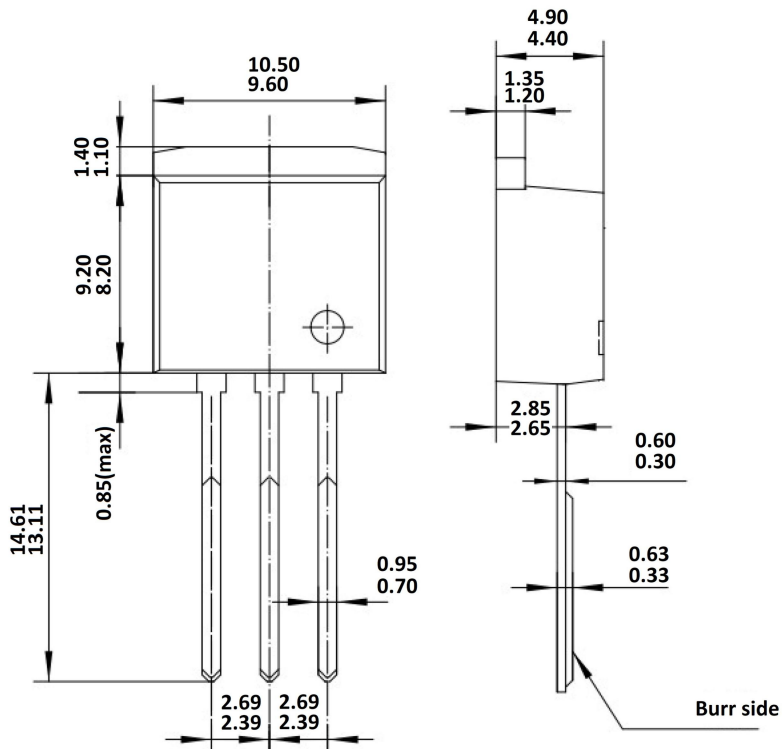
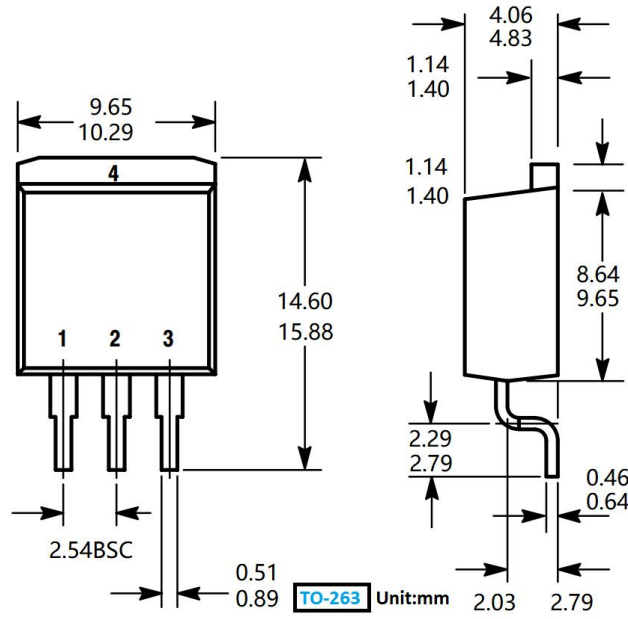
### Maximum Drain Current vs. Case Temperature



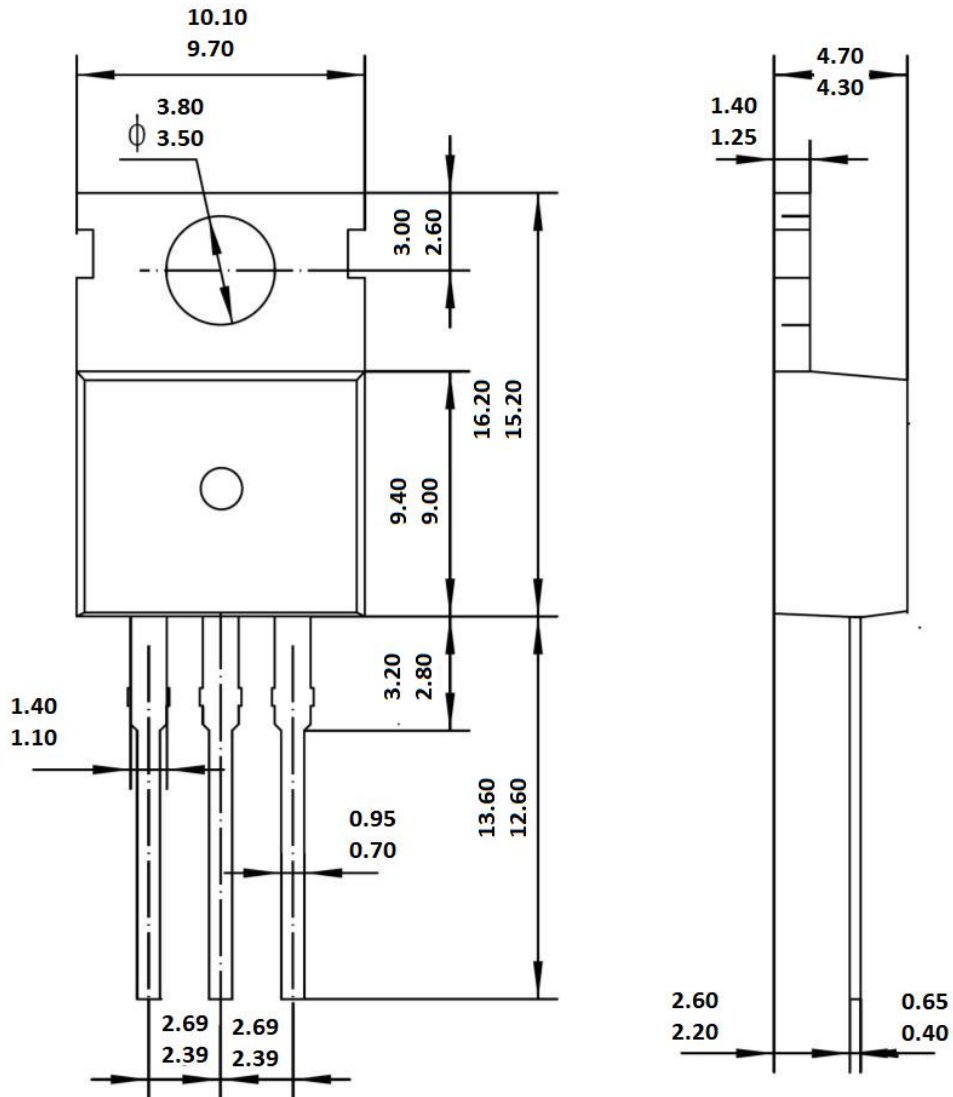
### Transient Thermal Response Curve



**PACKAGE MECHANICAL DATA**







**TO-220**

**Unit: mm**



