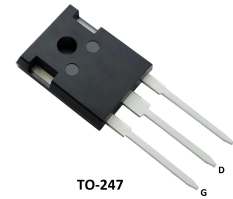


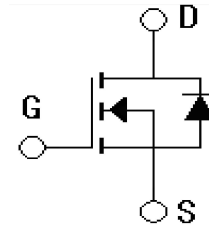
Features

- $V_{DS}=200V, I_D=33A$
- Low C_{rss}
- Low gate charge
- Improved dv/dt capability
- RoHS product



Applications

- High efficiency switch mode power supplies
- Electronic lamp ballasts based on half bridge
- UPS



Absolute Ratings ($T_c=25^\circ C$)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DSS}	200	V
Gate-Source Voltage	V_{GSS}	± 30	V
Drain Current-continuous	I_D $T_C=25^\circ C$	33	A
	$T_C=100^\circ C$	20	
Drain Current-pulse ⁽¹⁾	I_{DM}	132	A
Single Pulsed Avalanche Energy ($T_J=25^\circ C, I_D=I_{AR}, V_{DD}=50V$)	E_{AS}	600	mJ
Maximum Power Dissipation	PD $T_C=25^\circ C$	180	W
	Derate above $25^\circ C$	1.44	W/ $^\circ C$
Peak Diode Recovery voltage slope ⁽²⁾	dv/dt	5	V/ns
Operating and Storage Temperature Range	T_J, T_{STG}	-65~+150	$^\circ C$

1. Pulse width Limited by safe operating arer

2. $I_{SD} \leq 33A, di/dt \leq 300A/\mu S, V_{DD} \leq V_{(BR)DSS}, T_J \leq T_{JMAX}$.

Electrical Characteristics($T_{CASE}=25^\circ C$ unless otherwise specified)

Parameter	Symbol	Tests conditions	Min	Typ	Max	Units
Drain-Source Voltage	BV_{DSS}	$I_D=250\mu A, V_{GS}=0V$	200	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=V_{DSS}, V_{GS}=0V, T_C=25^\circ C$	-	-	1	μA
		$T_C=125^\circ C$	-	-	50	μA

Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 30V, V_{DS}=0V$	-	-	± 100	nA
On-Characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2	3	4	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=16A$	-	68	85	m Ω
Forward Transconductance	g_{fs}	$V_{DS}=40V, I_D=16A$	10	25	-	S
Dynamic Characteristics						
Input capacitance	C_{iss}	$V_{DS}=25V, V_{GS}=0V, f=1.0MHz$	-	2850	-	pF
Output capacitance	C_{oss}		-	420	-	pF
Reverse transfer capacitance	C_{rss}		-	120	-	pF

Electrical Characteristics ($T_{CASE}=25^{\circ}C$ unless otherwise specified)

Parameter	Symbol	Tests conditions	Min	Typ	Max	Units
Switching-Characteristics						
Turn-On delay time	$t_{d(on)}$	$V_{DS}=100V, I_D=16A, V_{GS}=10V, R_G=4.7\Omega$	-	25	-	ns
Turn-On rise time	t_r		-	50	-	ns
Turn-Off delay time	$t_{d(off)}$		-	60	-	ns
Turn-Off rise time	t_f		-	40	-	ns
Total Gate Charge	Q_g	$V_{DS}=160V, I_D=33A, V_{GS}=10V, R_G=4.7\Omega$	-	117	158	nC
Gate-Source charge	Q_{gs}		-	15	-	nC
Gate-Drain charge	Q_{gd}		-	50	-	nC
Drain-Source Diode Characteristics and Maximum Ratings						
Maximum Continuous Drain-Source Diode Forward Current	V_{SD}	$V_{GS}=0V, I_S=33A$	-	-	1.6	V
Diode Forward Current	I_S		-	-	33	A
Reverse recovery time	T_{rr}	$I_S=33A, di/dT=100A/\mu S$	-	370	-	nS
Reverse recovery charge	Q_{rr}	$VR=100V, VGS=0V, T_j=150^{\circ}C$	-	5.4	-	μC
Reverse recovery Current	I_{RRM}		-	29	-	A

Thermal Characteristic

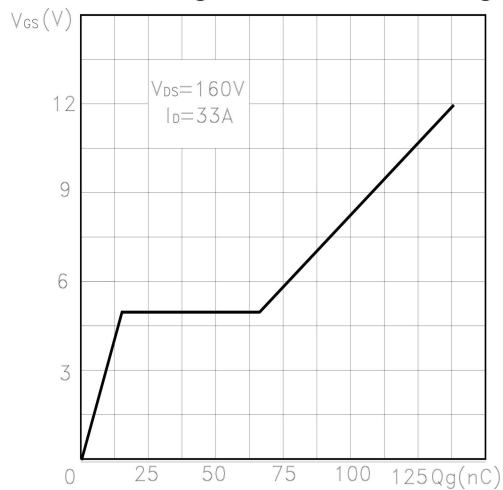
Parameter	Symbol	Value	Unit
Thermal Resistance, junction to Case	$R_{th(j-C)}$	0.66	$^{\circ}C/W$
Thermal Resistance, junction to Ambient	$R_{th(j-A)}$	30	$^{\circ}C/W$

Notes:

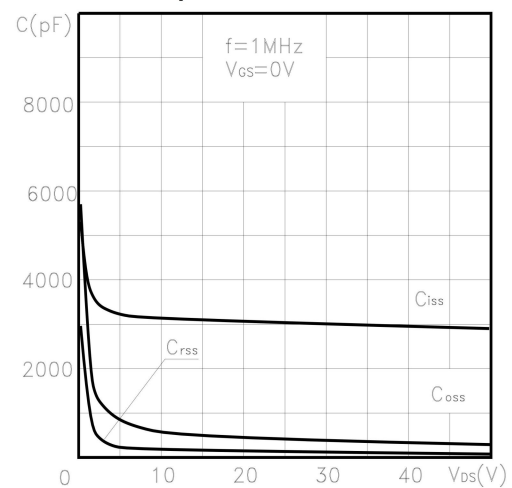
1. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$

Electrical Characteristics

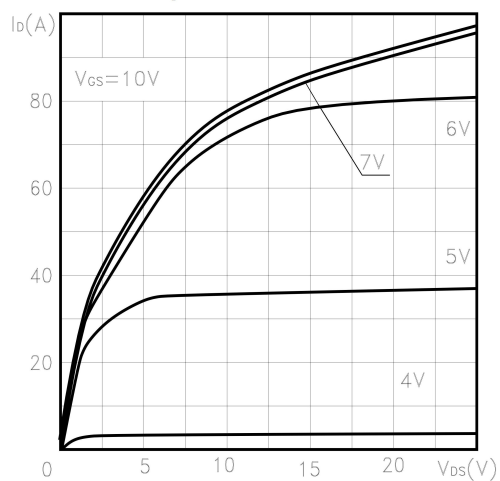
Gate Charge vs Gate-source Voltage



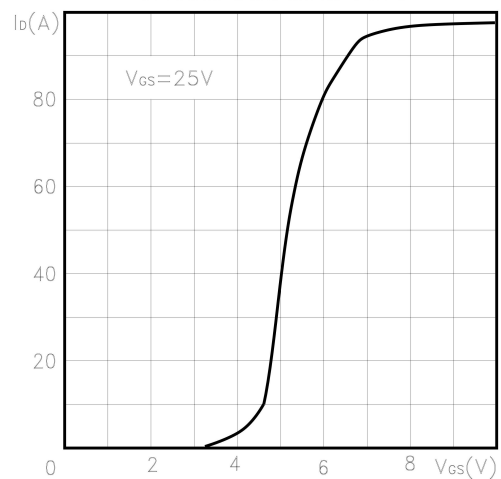
Capacitance Variations



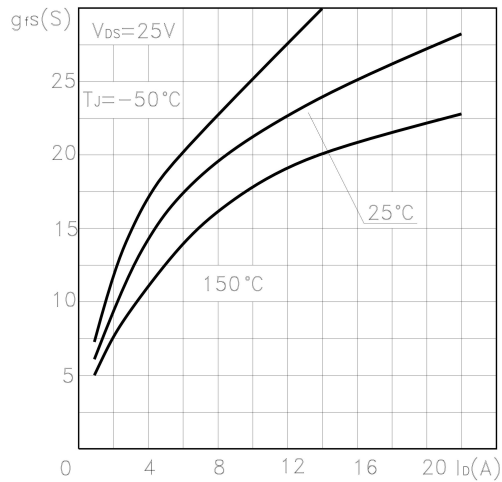
Output Characteristics



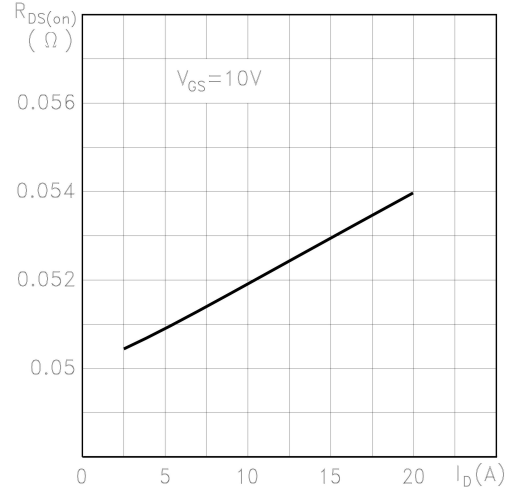
Transfer Characteristics



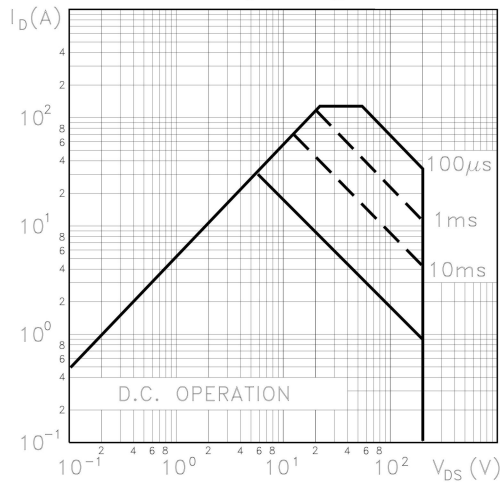
Transconductance



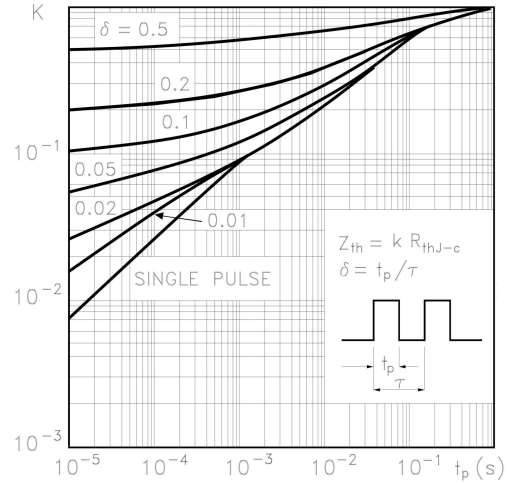
Static Drain-Source On Resistance



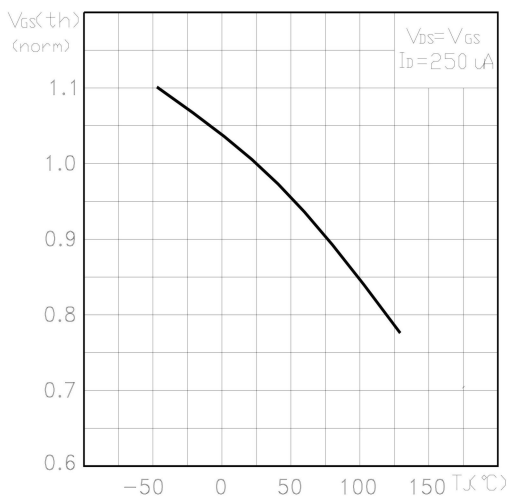
Safe Operating Area



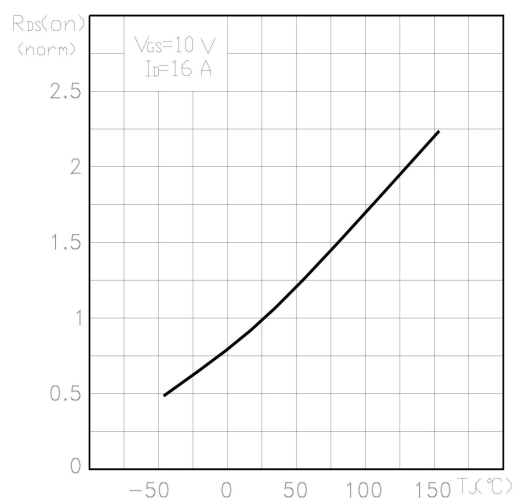
Thermal Impedance



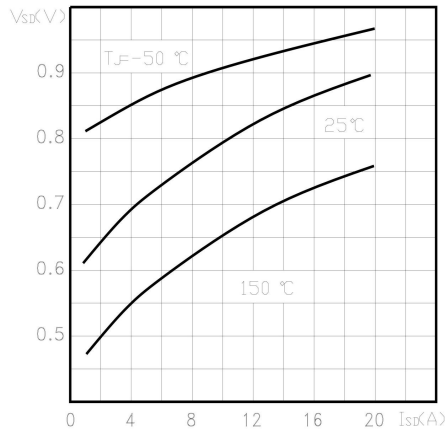
Normalized Gate Threshold Voltage vs Temp.



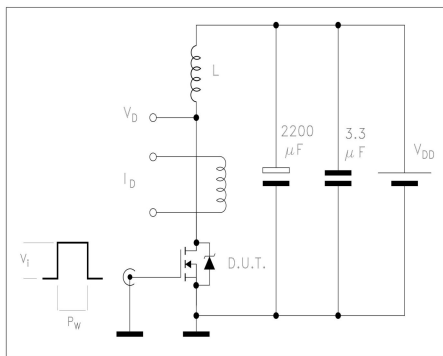
Normalized On Resistance vs Temperature



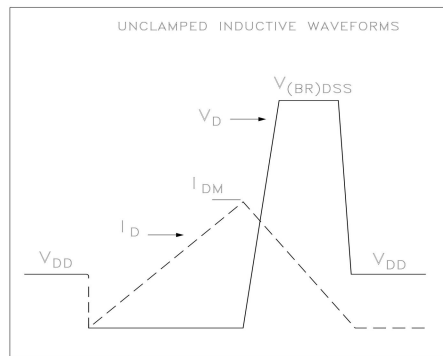
Source-drain Diode Forward Characteristics



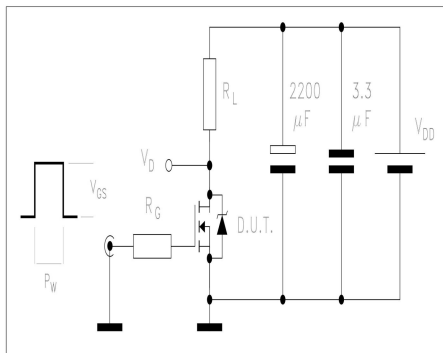
Unclamped Inductive Load Test Circuit



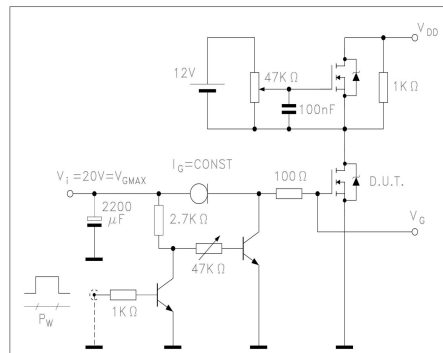
Unclamped Inductive Waveform



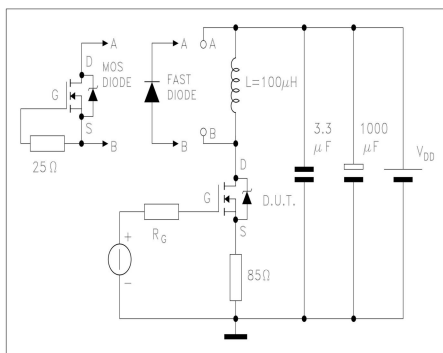
Switching Times Test Circuit For Resistive Load



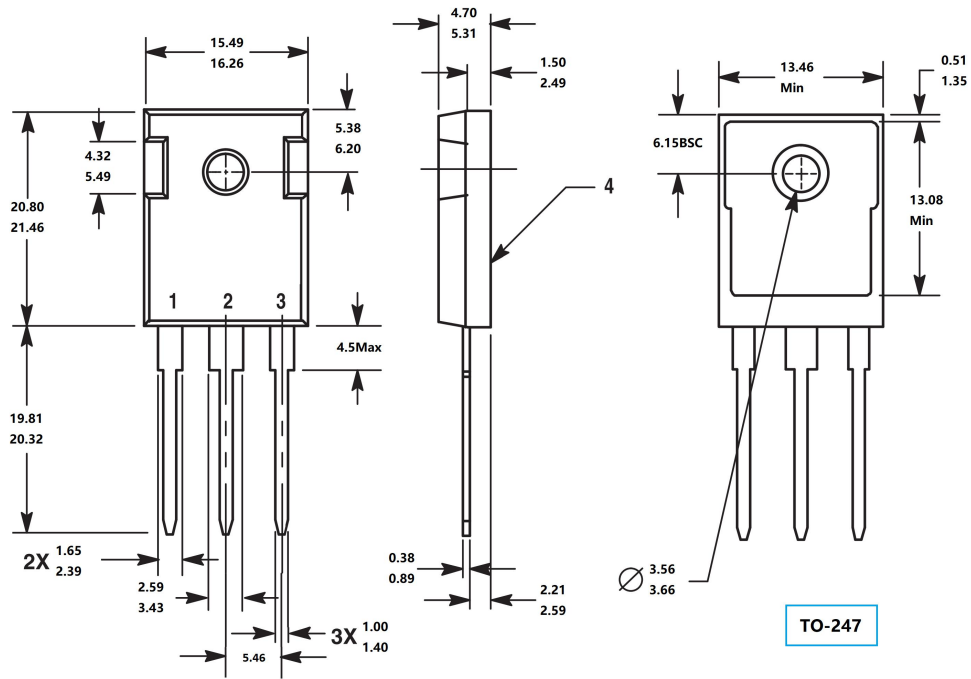
Gate Charge test Circuit



Test Circuit For Inductive Load Switching And Diode Recovery Times



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