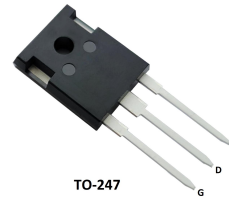


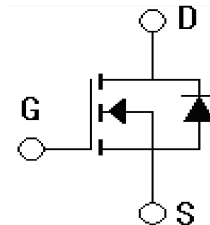
Features

- $V_{DS}=200V, I_D=33A$
- 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 ($T_c=25^\circ\text{C}$)

Parameter	Symbol		Limit	Unit
Drain-Source Voltage	V _{DSS}		200	V
Transient Gate-Source Voltage	V _{GSM}		±30	V
Continuous Gate-Source Voltage	V _{GSS}		±20	V
Drain Current-continuous	I _D	T _C =25℃	33	A
		T _C =100℃	20	
Drain Current-pulse(note 1)	I _{DM}		132	A
Single Pulsed Avalanche Energy (note 2)	E _{AS}		600	mJ
Maximum Power Dissipation	P _D	T _C =25℃	284	W
		T _C =100℃	113	W
Peak Diode Recovery voltage slope(note 3)	dv/dt		5	V/ns
Operating and Storage Temperature Range	T _J , T _{STG}		-65~+150	℃
Maximum Lead Temperature for Soldering Purposes	T _L		300	℃

Electrical Characteristics($T_{CASE}=25^\circ\text{C}$ 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,	-	-	1	μA
		T _c =125℃	-	-	50	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} =±30V, V _{DS} =0V	-	-	±100	nA
On-Characteristics						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	2	3	4	V
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =40A (note 4)	-	58	75	mΩ
Forward Transconductance	g _{fs}	V _{DS} =40V, I _D =16A (note 4)	10	25	-	S
Dynamic Characteristics						
Input capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, f=1.0MHz (note 5)	-	2879	-	pF
Output capacitance	C _{oss}		-	362	-	pF
Reverse transfer capacitance	C _{rss}		-	81	-	pF
Switching-Characteristics						
Turn-On delay time	t _{d(on)}	V _{DS} =100V, I _D =16A, V _{GS} =10V, R _G =4.7Ω	-	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 (note 5)	-	103	136	nC
Gate-Source charge	Q _{gs}		-	16	-	nC
Gate-Drain charge	Q _{gd}		-	53	-	nC
Drain-Source Diode Characteristics						
Continuous Drain-Source Diode Forward voltage	V _{SD}	V _{GS} =0V, I _S =33A(note 5)	-	-	1.6	V
Diode Forward Current	I _S		-	-	33	A
Reverse recovery time	T _{rr}	I _S =33A, di/dt=100A/μs V _R =100V, V _{GS} =0V	-	240	-	ns
Reverse recovery charge	Q _{rr}		-	2.10	-	μC
Reverse recovery Current	I _{RRM}		-	29	-	A

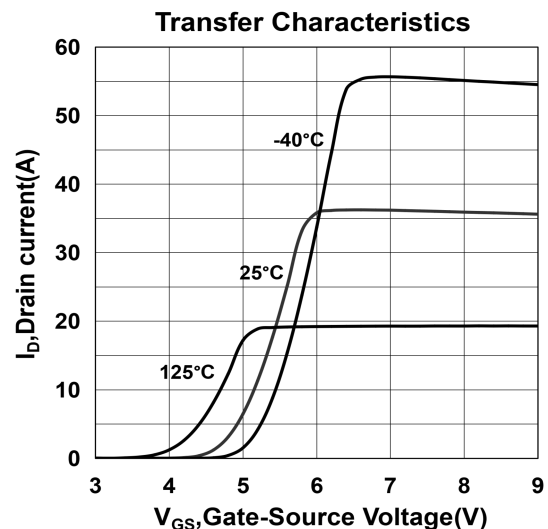
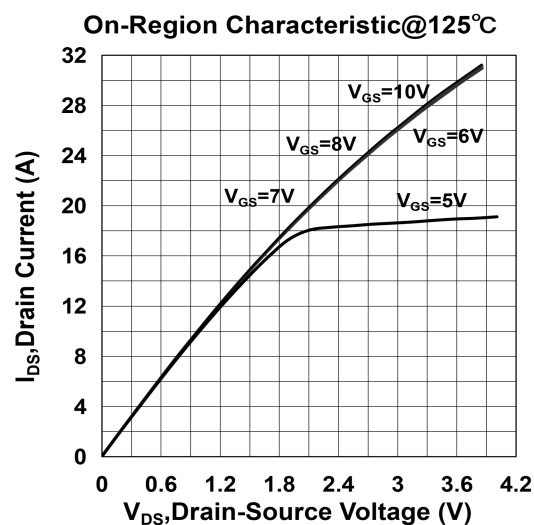
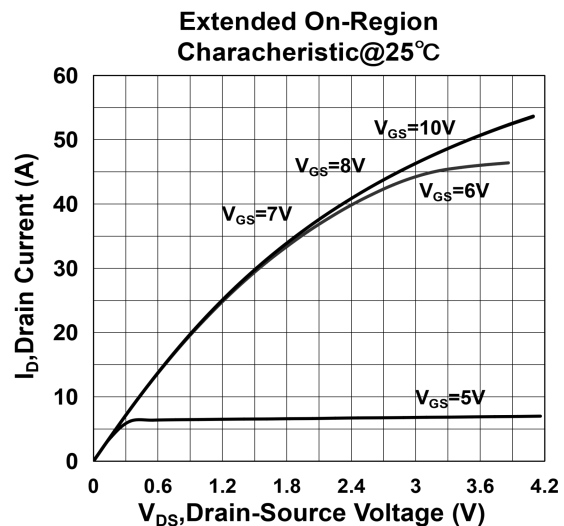
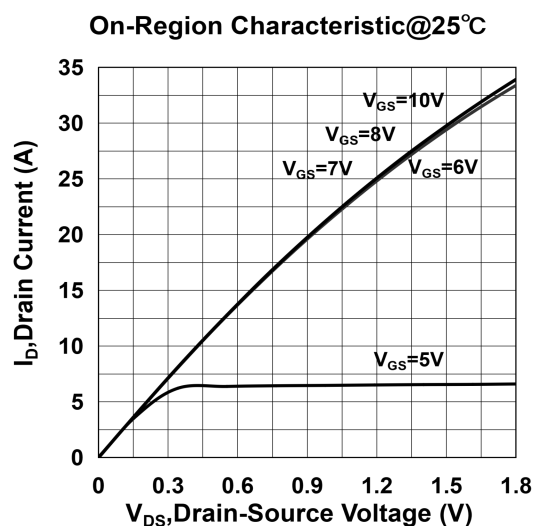
Thermal Characteristic

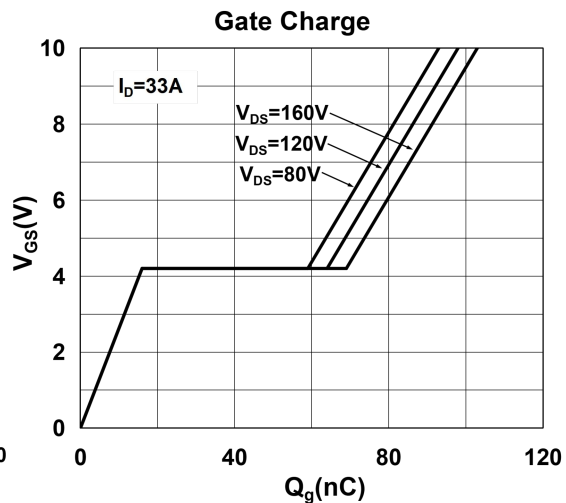
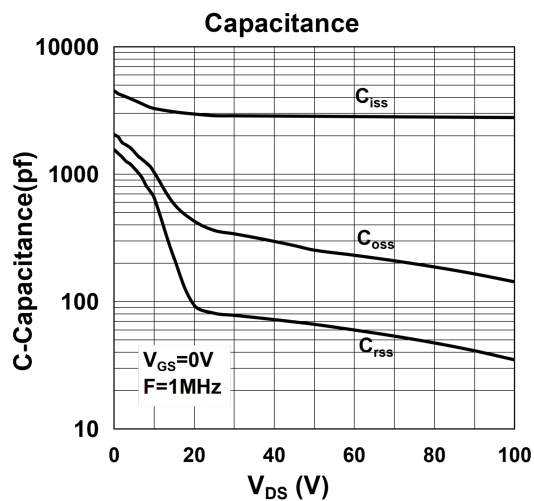
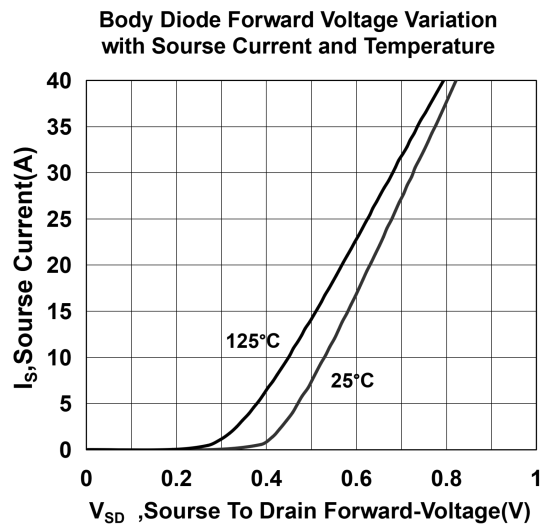
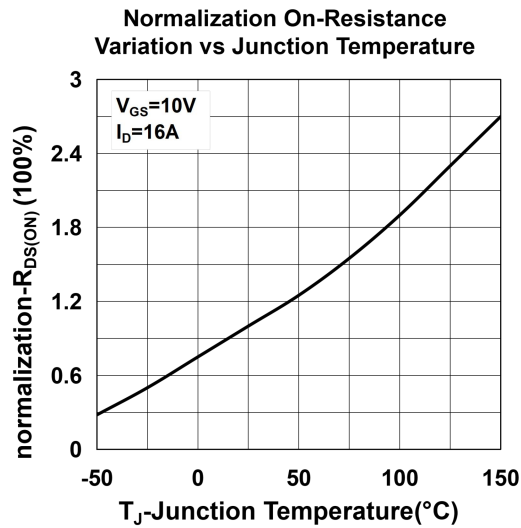
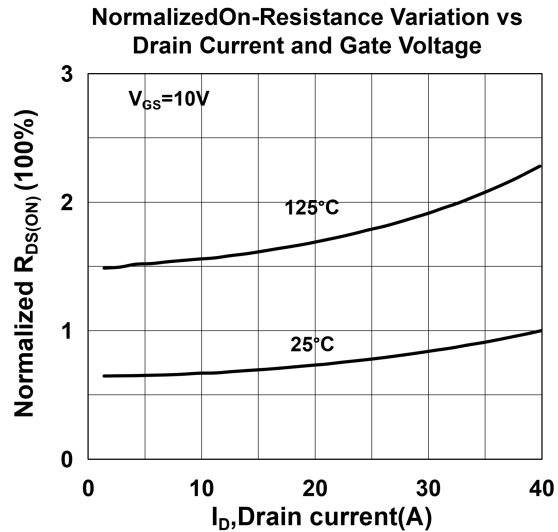
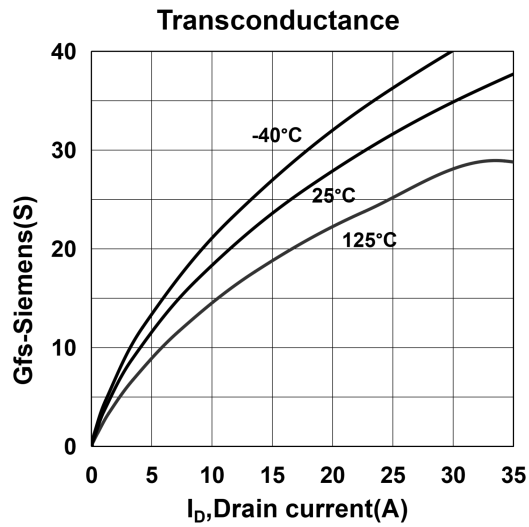
Parameter	Symbol	Value	Unit
Thermal Resistance,junction to Case,Max	$R_{th(j-C)}$	0.44	$^{\circ}\text{C}/\text{W}$
Thermal Resistance,junction to Ambient,Max	$R_{th(j-A)}$	30	$^{\circ}\text{C}/\text{W}$

Notes:

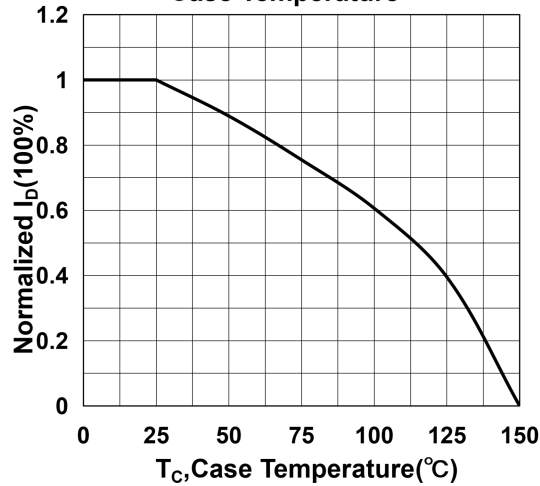
1. Pulse width Limited by maximum junction temperature
2. $L = 1.5\text{mH}$, $I_{AS} = 28\text{A}$, $V_{DD} = 50\text{V}$, $R_g = 25\Omega$, starting $T_J = 25^{\circ}\text{C}$,
3. $I_{SD} \leq 33\text{A}$, $di/dt \leq 300\text{A}/\mu\text{s}$, $V_{DD} \leq V_{(BR)DSS}$, $T_J \leq T_{JMAX}$.
4. Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$
5. Essentially independent of operation temperature

Electrical Characteristics

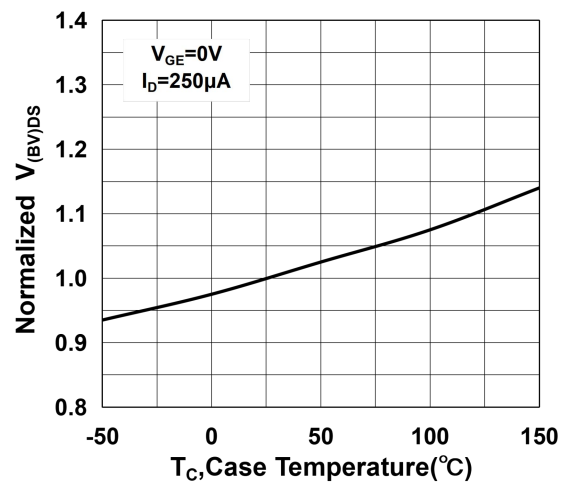




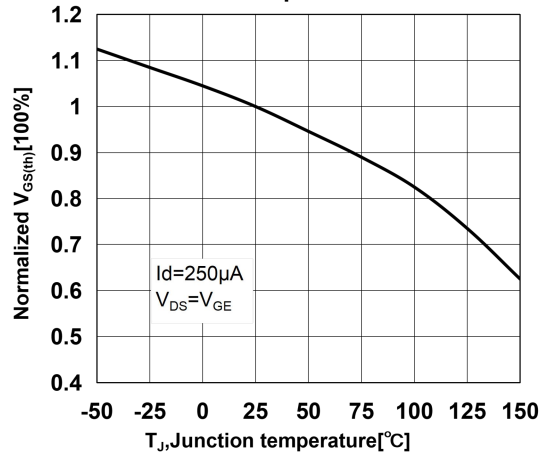
Maximum Drain Current vs Case Temperature



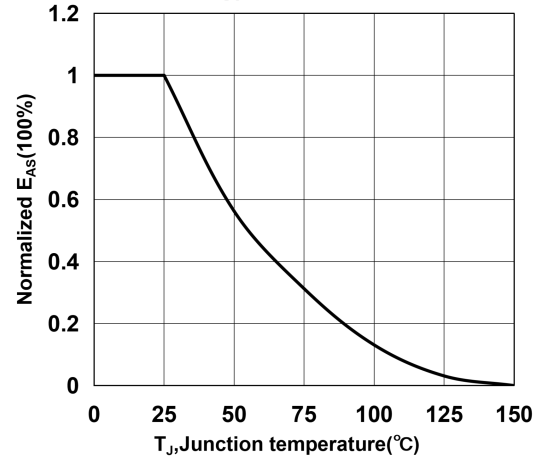
Normalized $V_{(BV)DS}$ vs temperature



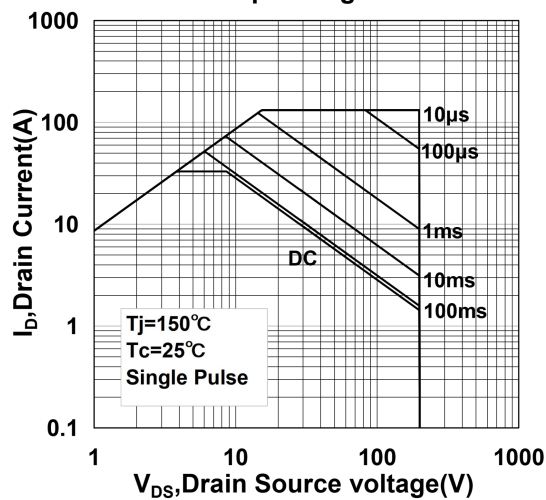
Normalized gate threshold voltage vs temperature



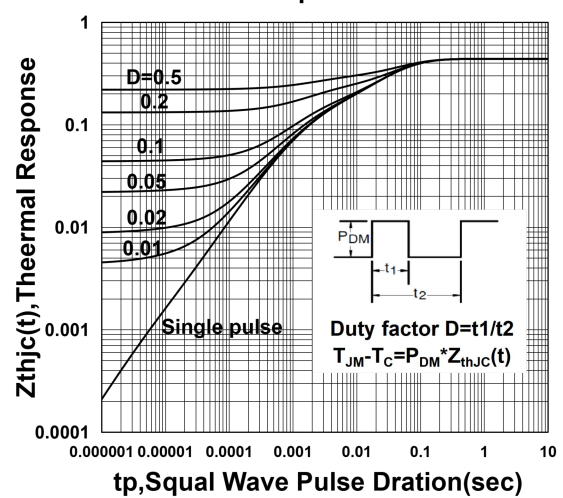
Normalized maximum avalanche energy vs temperature



Safe Operating Area

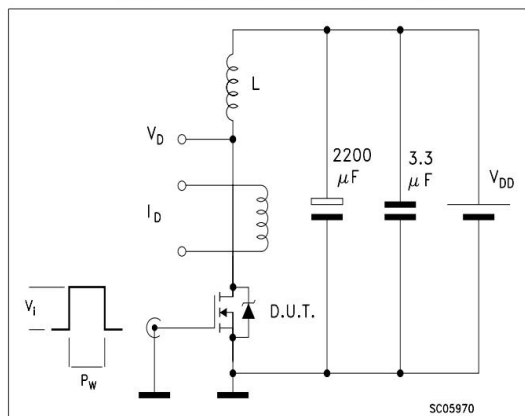


Transient response Curve

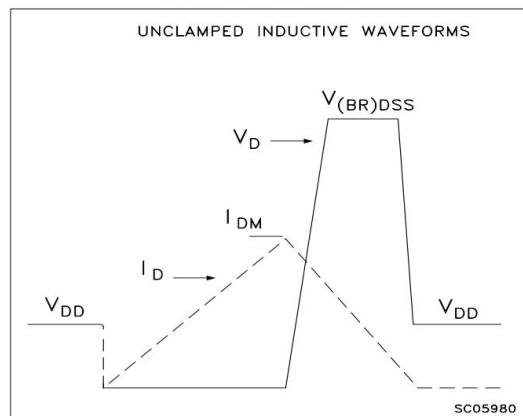


Test Circuit

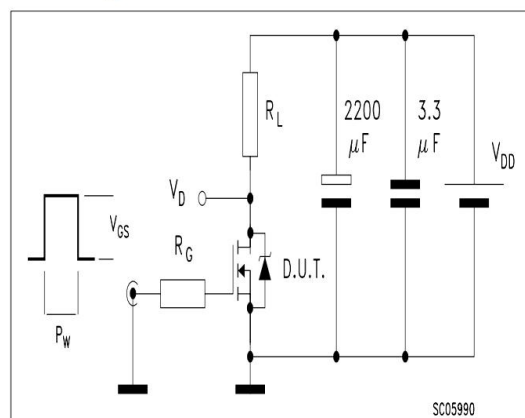
Unclamped Inductive Load Test Circuit



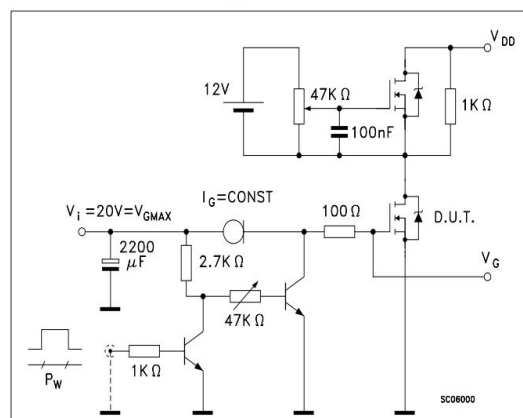
Unclamped Inductive Waveform



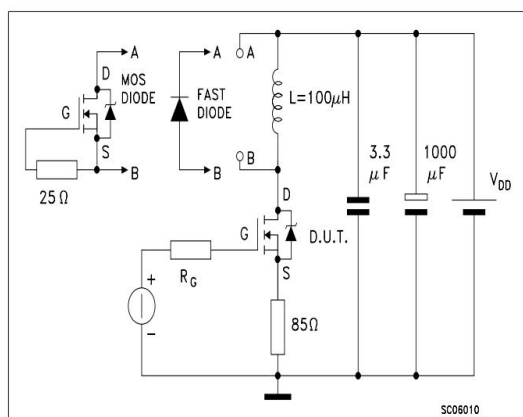
Switching Times Test Circuit For Resistive Load



Gate Charge test Circuit



Test Circuit For Inductive Load Switching And Diode Recovery Times



Package Mechanical Data(TO-247)

