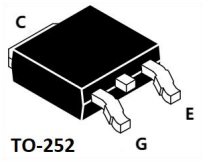
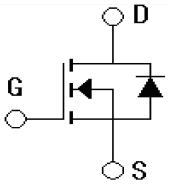
Features

- V_{DS}=60V,I_D=30A
  $R_{DS(ON)}$=35mΩ@V_{GS}=10V
- Low $R_{DS(ON)}$
- Super High Dense Cell Design
- Reliable and rugged



Applications

- Power factor correction (PFC)
- Switched mode power supplies (SMPS)
- Uninterruptible Power Supply (UPS)
- Power Management



Absolute Ratings (TC=25℃ unless otherwise specified)

Parameter	Symbol		Limit	Unit
Drain-Source Voltage	V_{DSS}		60	V
Gate-Source Voltage	V_{GSS}		±20	V
Drain Current-continuous(1)	I_D	T_C=25℃	30	A
		T_C=100℃	21	
Drain Current-pulse(2)	I_{DM}		120	A
Single Pulsed Avalanche Energy(3)	E_{AS}		16	mJ
Maximum Power Dissipation	P_D	TC=25℃	50	W
		TC=100℃	25	
Operating and Storage Temperature Range	T_J,T_{STG}		-55~+150	℃

Electrical Characteristics(T_C=25℃ unless otherwise specified)

Parameter	Symbol	Tests conditions	Min	Typ	Max	Units
Drain-Source Voltage	BV_{DSS}	I_D=250μA,V_{GS}=0V	60	65	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=V_{DSS},V_{GS}=0V, Tc=25℃	-	-	1	μA
		Tc=125℃	-	-	50	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±20V,V_{DS}=0V	-	-	±100	nA
On-Characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250μA	0.8	1.3	2.0	V
Static Drain-Source On-Resistance(4)	$R_{DS(ON)}$	V_{GS}=10V,I_D=12A	-	35	45	mΩ

Dynamic Characteristics[5]						
Input capacitance	C_{iss}	V_{DS}=25V, V_{GS}=0V, f=1.0MHZ	-	2700	-	pF
Output capacitance	C_{oss}		-	1016	-	pF
Reverse transfer capacitance	C_{rss}		-	487	-	pF

Electrical Characteristics(T_{CASE}=25℃ unless otherwise specified)

Parameter	Symbol	Tests conditions	Min	Typ	Max	Units
Switching-Characteristics[5]						
Gate Resistance	R_G	V_{GS}=0V,V_{DS}=0V,F=1MHz	-	25	-	Ω
Turn-On delay time	$t_{d(on)}$	V_{DS}=28V,I_D=16A, V_{GS}=15V,R_G=25Ω	-	52	-	ns
Turn-On rise time	t_r		-	142	-	ns
Turn-Off delay time	$t_{d(Off)}$		-	355	-	ns
Turn-Off rise time	t_f		-	230	-	ns
Total Gate Charge	Q_g	V_{DS}=48V,I_D=16A, V_{GS}=10V,R_G=25Ω	-	19	-	nC
Gate-Source charge	Q_{gs}		-	6.3	-	nC
Gate-Drain charge	Q_{gd}		-	4.8	-	nC
Drain-Source Diode Characteristics and Maximum Ratings						
Maximum Continuous Drain-Source Diode Forward Current[4]	V_{SD}	V_{GS}=0V,I_S=16A	-	0.73	1.2	V
Diode Forward Current	I_S		-	-	30	A
Reverse recovery time	T_{rr}	I_{SD}=15A, dI_{SD}/dt=100A/μs	-	100	-	nS
Reverse recovery charge	Q_{rr}		-	0.33	-	μC

Thermal Characteristic

Parameter	Symbol	Value	Unit
Thermal Resistance,junction to Case	R_{th}(j-C)	3	℃/W
Thermal Resistance,junction to Ambient[6]	R_{th}(j-A)	100	℃/W

Notes:

1.Calculated continuous current based on maximum allowable junction temperature.

2.Pulse width limited by safe operating area.

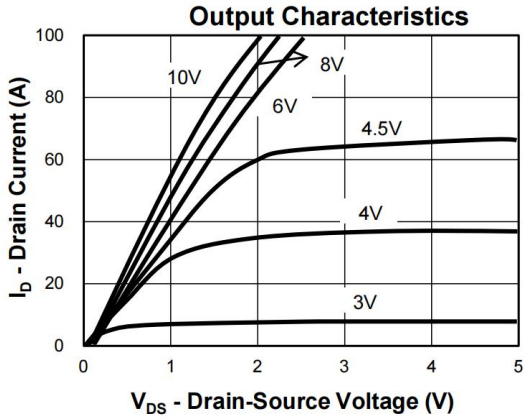
3.Limited by T_{Jmax}, I_{AS} =8A, L=0.5mH, V_{DD} = 30V, R_G = 25Ω , Starting T_J = 25°C.

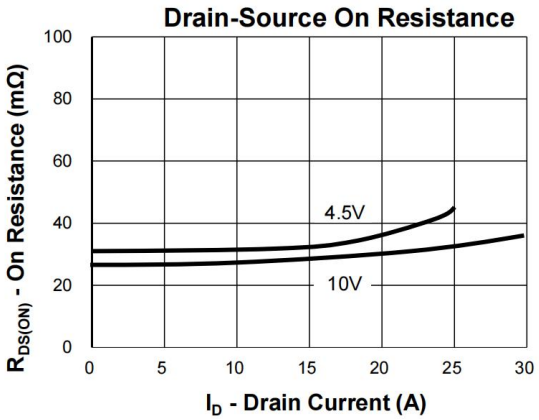
4.Pulse test;Pulse width≤300μs, duty cycle≤2%.

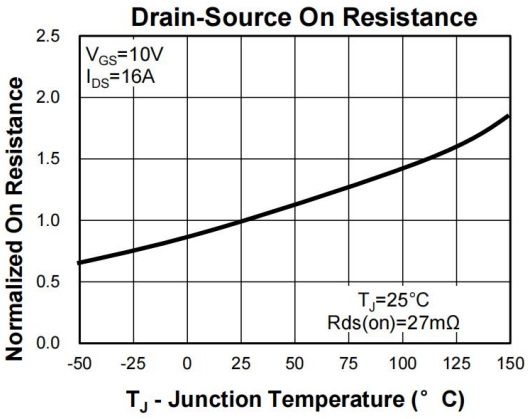
5.Guaranteed by design, not subject to production testing.

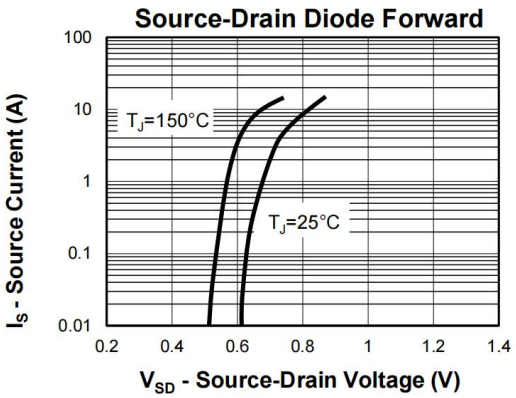
6.When mounted on 1 inch square copper board, t≤10sec. The value in any given application depends on the user's specific board design.

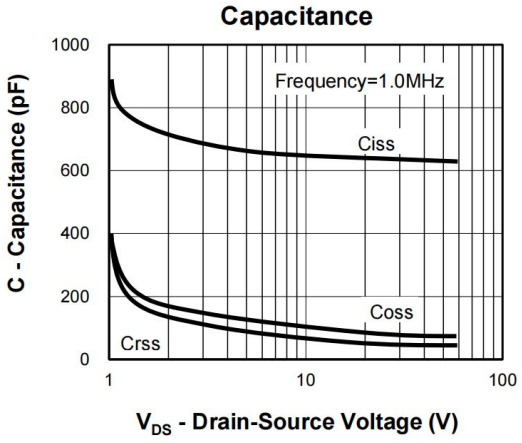
Electrical Characteristics

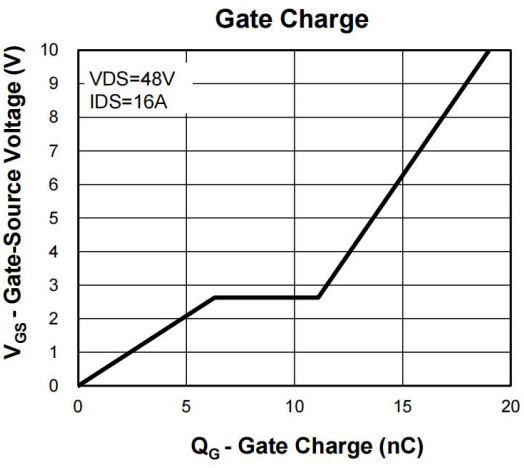


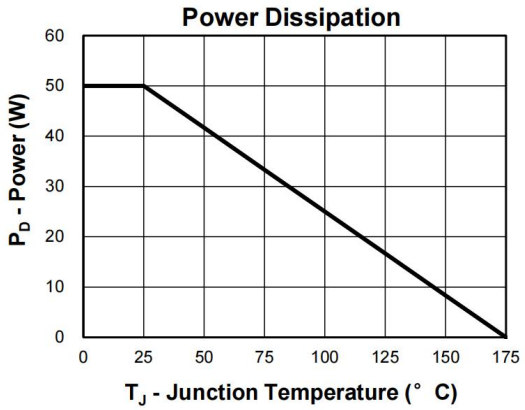


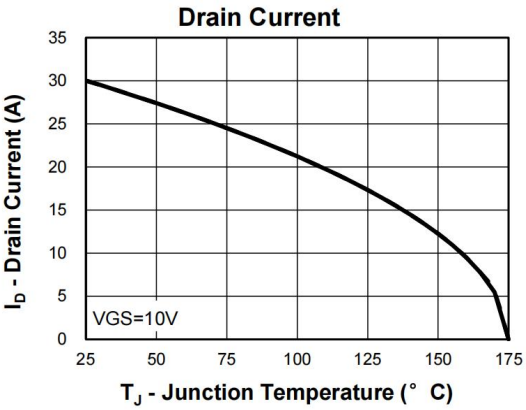


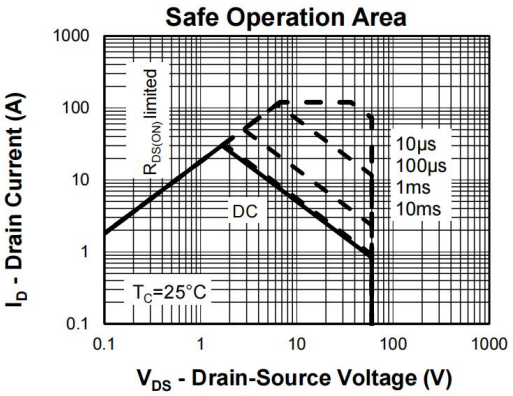


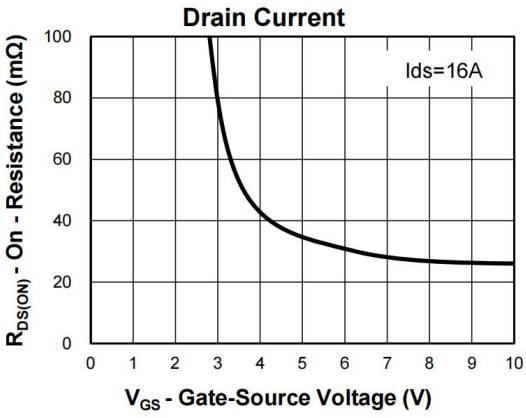


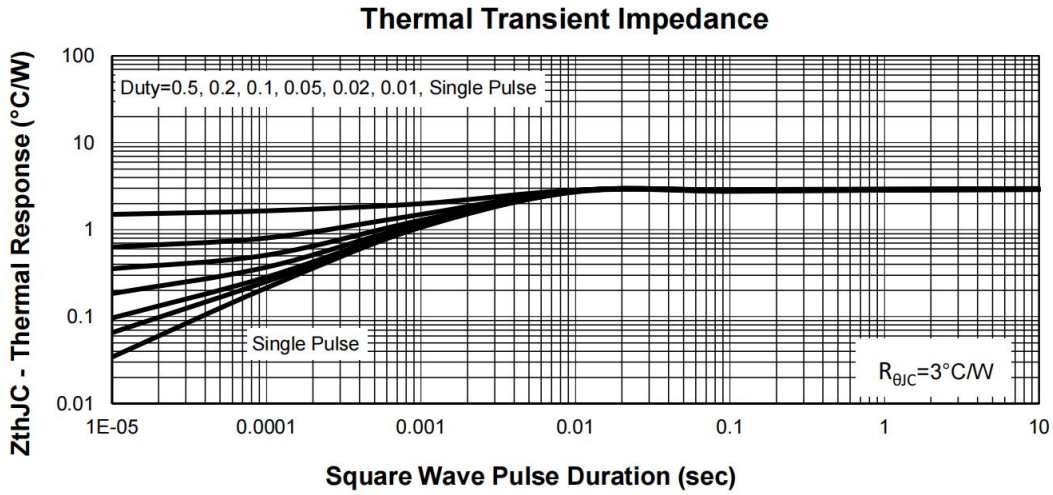



Power Dissipation
P_D - Power (W)
60
50
40
30
20
10
0
0
25
50
75
100
125
150
175
T_J - Junction Temperature (° C)


Drain Current
I_D - Drain Current (A)
35
30
25
20
15
10
5
0
VGS=10V
25
50
75
100
125
150
175
T_J - Junction Temperature (° C)

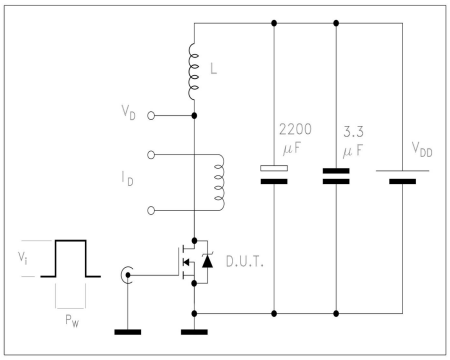

Safe Operation Area
I_D - Drain Current (A)
1000
100
10
1
0.1
$R_{DS(ON)}$ limited
DC
10µs
100µs
1ms
10ms
T_C=25°C
0.1
1
10
100
1000
V_{DS} - Drain-Source Voltage (V)


Drain Current
$R_{DS(ON)}$ - On - Resistance (mΩ)
100
80
60
40
20
0
Ids=16A
0
1
2
3
4
5
6
7
8
9
10
V_{GS} - Gate-Source Voltage (V)

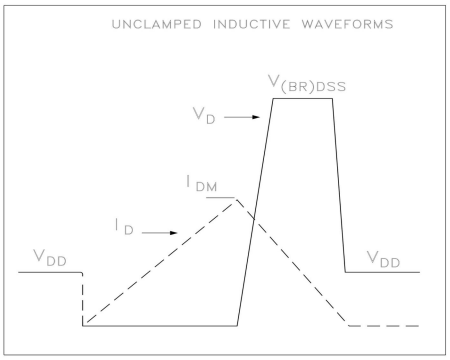

Thermal Transient Impedance
ZthJC - Thermal Response (°C/W)
100
10
1
0.1
0.01
Duty=0.5, 0.2, 0.1, 0.05, 0.02, 0.01, Single Pulse
Single Pulse
$R_{\theta JC}$=3°C/W
1E-05
0.0001
0.001
0.01
0.1
1
10
Square Wave Pulse Duration (sec)

Test Philosophy

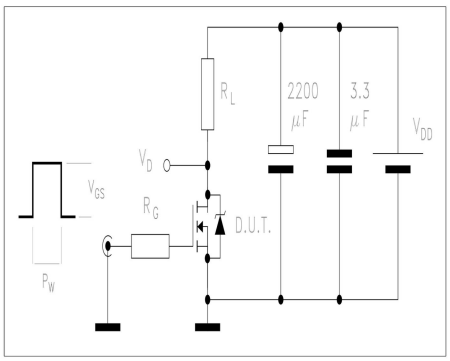
Unclamped Inductive Load Test Circuit



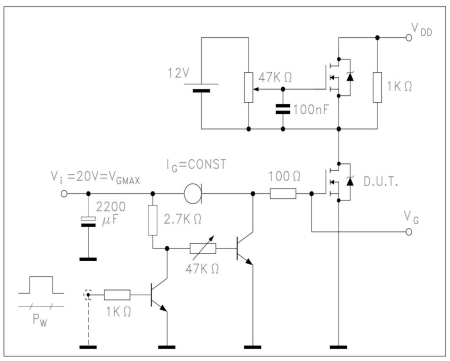
Unclamped Inductive Waveform



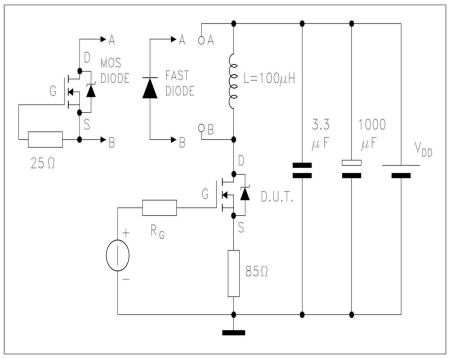
Switching Times Test Circuit For Resistive Load



Gate Charge test Circuit



Test Circuit For Inductive Load Switching And Diode Recovery Times



Package Mechanical Data