

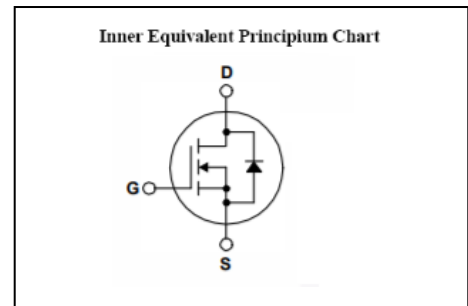
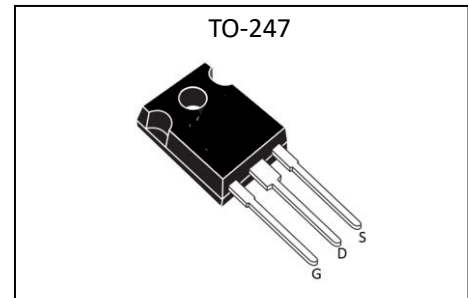
Features

- Fast Switching
- Low ON Resistance(Typical Data:0.166Ω)
- Low Gate Charge Minimize Switching loss
- Fast Recovery Body Diode
- 100% Single Pulse avalanche energy Test

Applications

- Adaptor
- Charger
- SMPS Standby Power

$V_{DSS}(T_C=150^{\circ}C)$	500	V
I_D	25	A
$P_D(T_C=25^{\circ}C)$	270	W
$R_{DS(ON).type.}$	166	mΩ



Absolute (Tc=25°C unless otherwise specified)

Symbol	Parameter	Rating	Units
V_{DSS}	Drain-to-Source Voltage*1	500	V
I_D	Continuous Drain Current	25	A
I_{DM}	Pulsed Drain Current at $V_{GS}=10V^{*2}$	100	A
V_{GS}	Gate-to-Source Voltage	±30	V
E_{AS}	Single Pulse Avalanche Energy	1800	mJ
I_{AS}	Avalanche Current	8.8	A
dv/dt	Peak Diode Recovery dv/dt*3	5.0	V/ns
P_D	Power Dissipation	270	W
	Derating Factor above 25°C	2.16	W/°C
T_J, T_{stg}	Operating Junction and Storage Temperature Range	150,-55 to 150	°C
T_L	Maximum Temperature for Soldering	300	°C

Caution Stresses greater than those in the "Absolute Maximum Ratings" may cause permanent damage to the device

Thermal Characteristics

Symbol	Parameter	Rating	Units
R _{θJC}	Thermal Resistance, Junction-to-Case	0.46	°C/ W
R _{θJA}	Thermal Resistance, Junction-to-Ambient	40	°C/ W

Electrical Characteristics (T_c= 25°C unless otherwise specified)

OFF Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
V _{DSS}	Drain to Source Breakdown Voltage	V _{GS} =0V, I _D =250μA	500	--	--	V
I _{DSS}	Drain to Source Leakage Current	V _{DS} =500V, V _{GS} =0V, T _a =25°C	--	--	1.0	μA
		V _{DS} =400V, V _{GS} =0V, T _a =125°C	--	--	100	
I _{GSS(F)}	Gate to Source Forward Leakage	V _{GS} =+30V	--	--	100	nA
I _{GSS(R)}	Gate to Source Reverse Leakage	V _{GS} =-30V	--	--	-100	nA

ON Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
R _{DS(ON)}	Drain-to-Source On-Resistance*4	V _{GS} =10V, I _D =12.5 A	--	166	190	mΩ
V _{GS(TH)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	2.0	--	4.0	V
g _{fs}	Forward Transconductance*4	V _{DS} =15V, I _D =15A	--	25	--	S

Dynamic Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
C _{iss}	Input Capacitance	V _{GS} =0V V _{DS} =25V f=1.0MHz	--	4650	--	pF
C _{oss}	Output Capacitance		--	400	--	
C _{rss}	Reverse Transfer Capacitance		--	40	--	

Resistive Switching Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
t _{d(ON)}	Turn-on Delay Time	I _D =25A, V _{DD} =250V V _{GS} =10V, R _g =25Ω	--	50	--	ns
t _r	Rise Time		--	115	--	
t _{d(OFF)}	Turn-Off Delay Time		--	301	--	
t _f	Fall Time		--	125	--	
Q _g	Total Gate Charge	I _D =25A, V _{DD} =250V V _{GS} =10V	--	85	--	nC
Q _{gs}	Gate to Source Charge		--	14	--	
Q _{gd}	Gate to Drain ("Miller")Charge		--	37	--	

Source-Drain Diode Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
I_{SD}	Continuous Source Current (Body Diode)		--	--	25	A
I_{SM}	Maximum Pulsed Current (Body Diode)		--	--	100	A
V_{SD}	Diode Forward Voltage	$I_S=25A, V_{GS}=0V$	--	--	1.5	V
t_{rr}	Reverse Recovery Time	$I_S=25A, T_j=25^\circ C$	--	530	--	ns
Q_{rr}	Reverse Recovery Charge	$dI_F/dt=100A/\mu s, V_{GS}=0V$	--	5.26	--	μC

*1: $T_j = +25^\circ C$ to $+150^\circ C$

*2: Repetitive rating; pulse width limited by maximum junction temperature.

*3: $I_{SD}=25A, di/dt < 100A/\mu s, V_{DD} < BV_{DSS}, T_j = +150^\circ C$.

*4: Pulse width $< 380\mu s$; duty cycle $< 2\%$.

Characteristics Curves

Figure 1. On-Region Characteristics

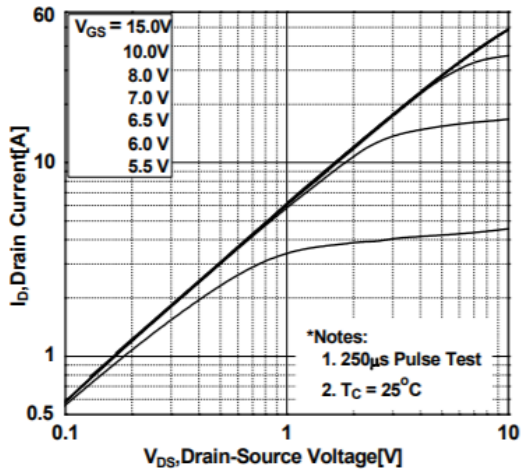


Figure 2. Transfer Characteristics

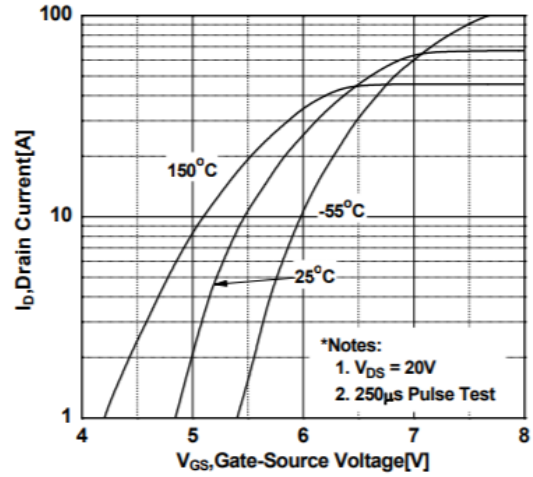


Figure 3. On-Resistance Variation vs. Drain Current and Gate Voltage

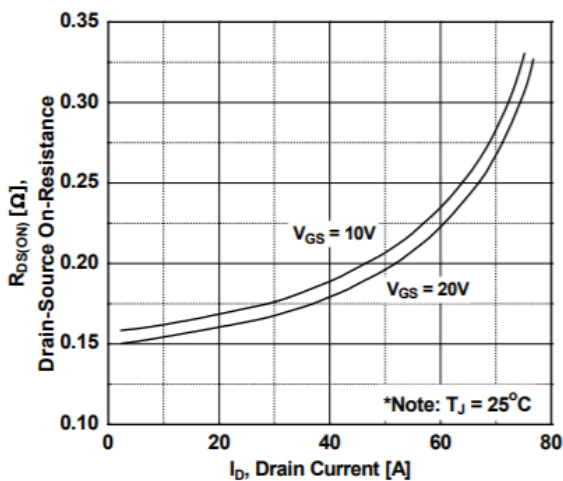


Figure 4. Body Diode Forward Voltage Variation vs. Source Current and Temperature

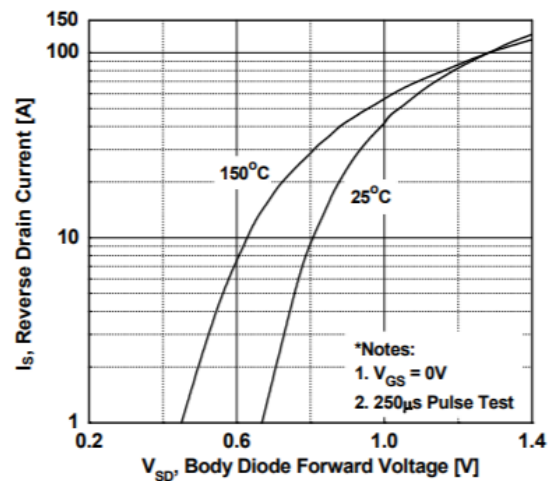


Figure 5. Capacitance Characteristics

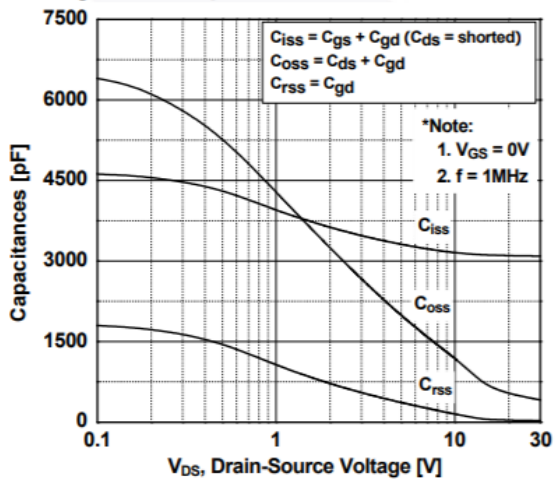


Figure 6. Gate Charge Characteristics

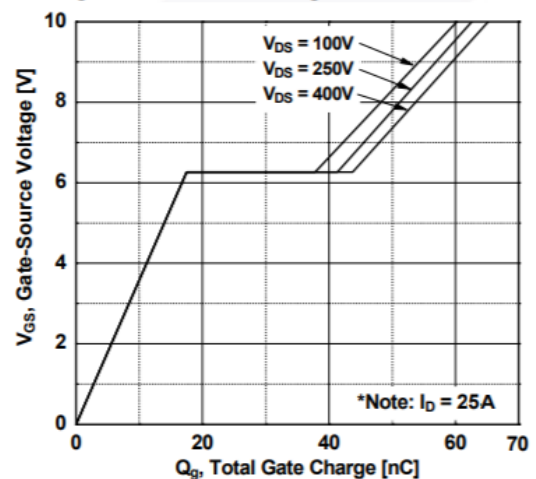


Figure 7. Breakdown Voltage Variation vs. Temperature

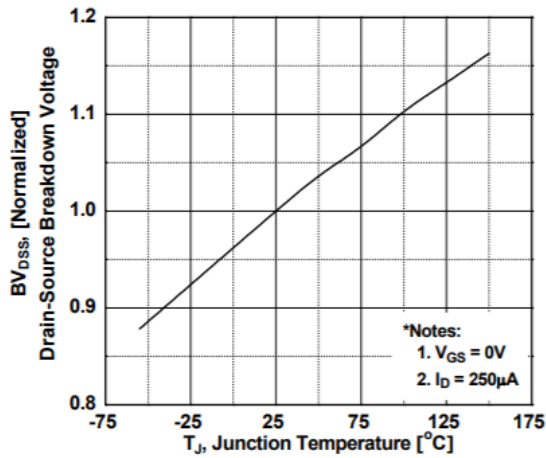


Figure 8. On-Resistance Variation vs. Temperature

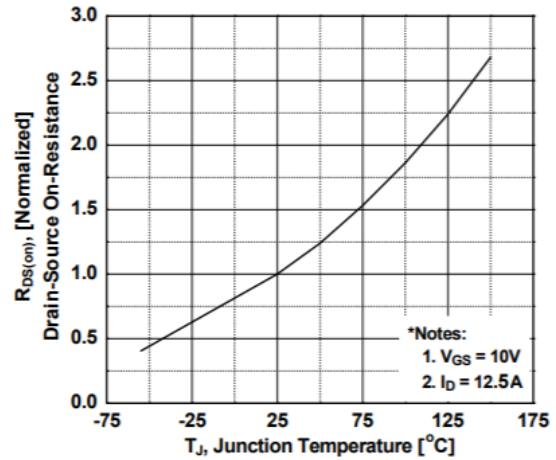


Figure 9. Maximum Safe Operating Area

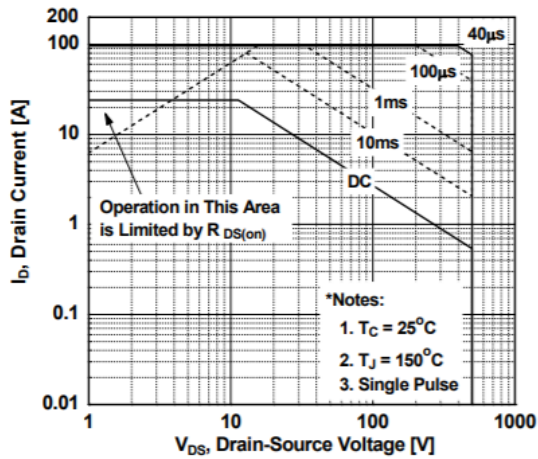


Figure 10. Maximum Drain Current vs. Case Temperature

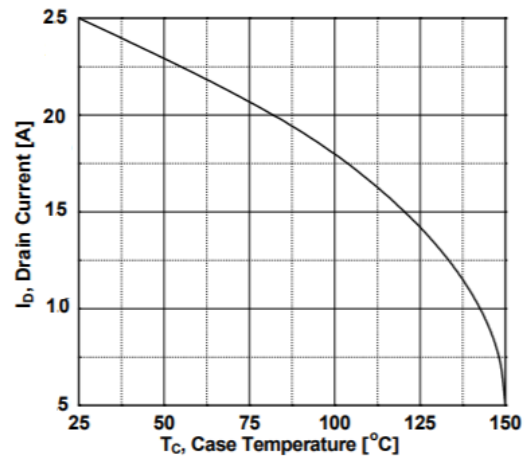
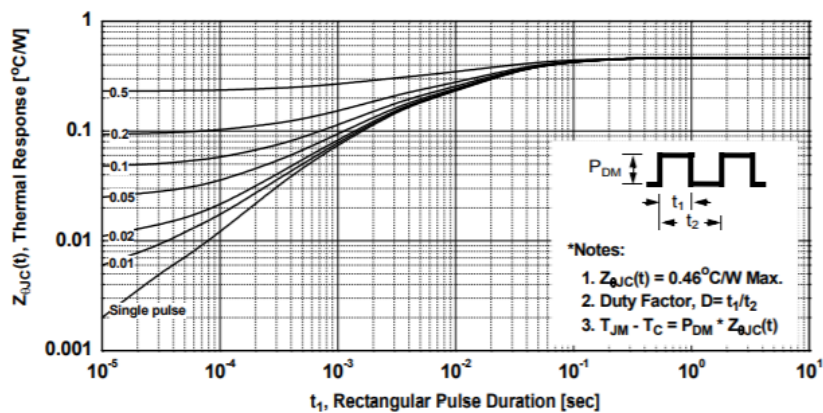


Figure 11. Transient Thermal Response Curve



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