

■ General Description

- Split Gate Trench MOSFET technology。
- Excellent package for heat dissipation。
- High density cell design for low $R_{DS(ON)}$ 。

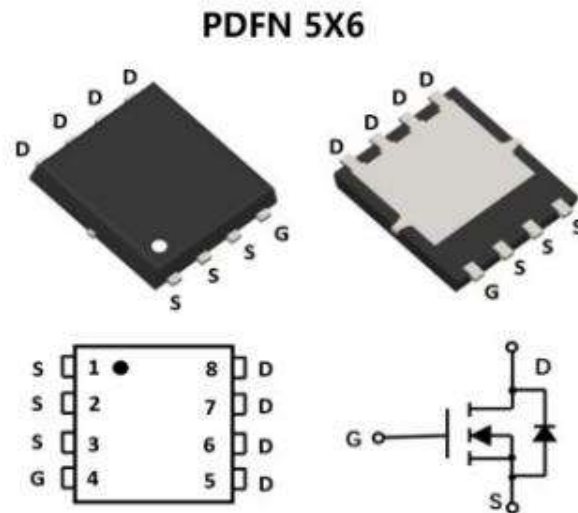
■ Features

- VDS: 40V。
- ID: 140A (Package Limited)。
- $R_{DS(ON)}$ (at VGS=10V): < 2.3 m Ω 。
- $R_{DS(ON)}$ (at VGS=4.5V): < 3.2 m Ω 。
- 100% UIS Tested。
- 100% ∇ VDS Tested。
- PDFN5*6 package。

■ Applications

- DC-DC Converters。
- Power management functions。
- Synchronous-rectification applications。

■ Pin Assignment



■ Absolute Maximum Ratings

Parameter	Symbol	Limit	Unit
Drain-source Voltage	VDS	40	V
Gate-source Voltage	VGS	±20	V
Drain Current ^A T _c =25°C	ID	140	A
Pulsed Drain Current ^B	IDM	560	A
Avalanche energy ^C	EAS	200	mJ
Total Power Dissipation ^D	PD	83	W
Thermal Resistance Junction-to-Case	R _{θJC}	1.5	°C/ W
Thermal Resistance Junction-to-Ambient ^E	R _{θJA}	20	
Junction and Storage Temperature Range	T _J ,T _{STG}	-55~ +150	°C

■ Electrical Characteristics

(T_J=25°C unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
V _{(BR)DSS}	Drain- Source Breakdown Voltage	V _{GS} =0V, I _D =250μA	40	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =40V, V _{GS} =0V,	-	-	1.0	μA
I _{GSS}	Gate to Body Leakage Current	V _{DS} =0V, V _{GS} = ±20V	-	-	±100	nA
On Characteristics						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	1.0	-	2.5	V
R _{DS(on)}	Static Drain- Source on- Resistance <i>*note3</i>	V _{GS} =10V, I _D =20A	-	1.65	2.3	mΩ
		V _{GS} =4.5V, I _D =20A	-	2.45	3.2	
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =25V, V _{GS} =0V, f=1.0MHz	-	3830	-	pF
C _{oss}	Output Capacitance		-	2794	-	pF
C _{rss}	Reverse Transfer Capacitance		-	474	-	pF
Q _g	Total Gate Charge	V _{DD} =32V, I _D =10A,	-	66	-	nC
Q _{gs}	Gate- Source Charge		-	13.6	-	nC
Q _{gd}	Gate- Drain("Miller") Charge		-	12.6	-	nC
Switching Characteristics						
t _{d(on)}	Turn- on Delay Time	V _{DD} =20V, R _D =0.5Q, R _G =10Ω	-	892.8	-	ns
t _r	Turn- on Rise Time		-	21.4	-	ns
t _{d(off)}	Turn- off Delay Time		-	72.28	-	ns
t _f	Turn- off Fall Time		-	34.52	-	ns
Drain- Source Diode Characteristics and Maximum Ratings						
I _S	Maximum Continuous Drain to Source Diode Forward Current		-	-	140	A
I _{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	560	A
V _{SD}	Drain to Source Diode Forward Voltage	V _{GS} =0V, I _S =20A	-	-	0.78	V
t _{rr}	Body Diode Reverse Recovery Time	T _J = 25 °C, I _F =I _S , dI/dt=100A/μs	-	31	-	ns
Q _{rr}	Body Diode Reverse Recovery Charge		-	110	-	nC

- Notes: 1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
 2. EAS condition: T_J=25°C, V_D=32V, L=0.5mH
 3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 0.5%

■ Test Circuit

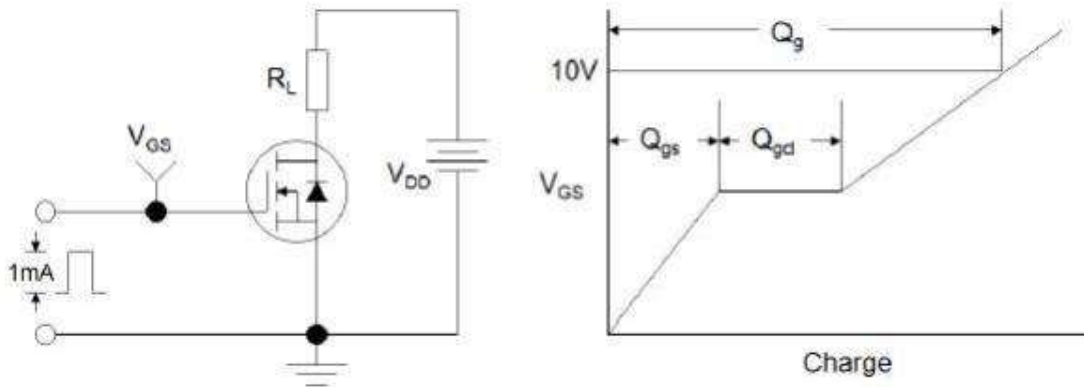


Figure1: Gate Charge Test Circuit & Waveform

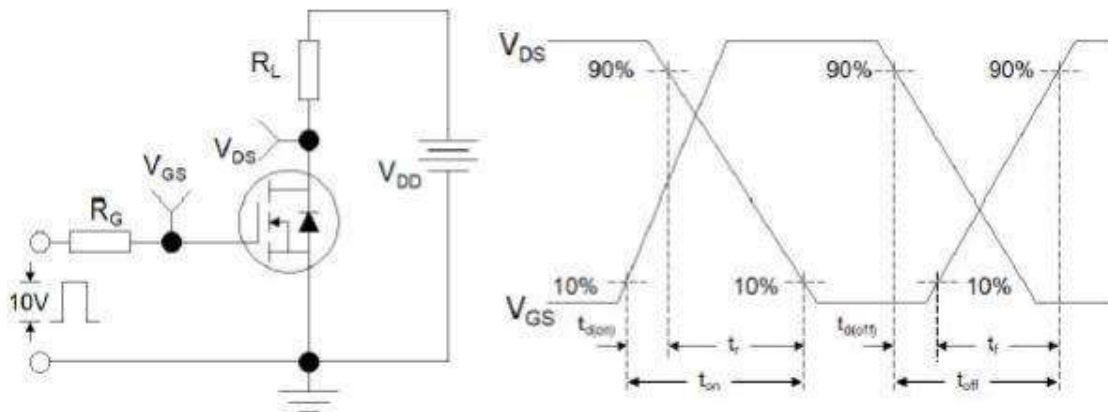


Figure 2: Resistive Switching Test Circuit & Waveforms

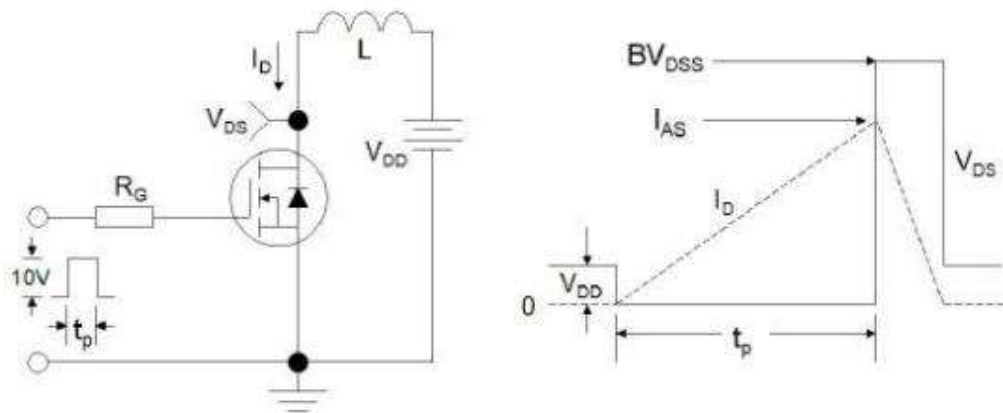


Figure 3: Unclamped Inductive Switching Test Circuit & Waveforms

■ Reference Data

Figure 1: Output Characteristics

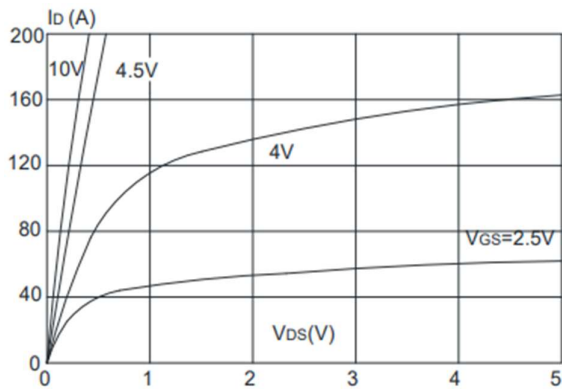


Figure 2: Typical Transfer Characteristics

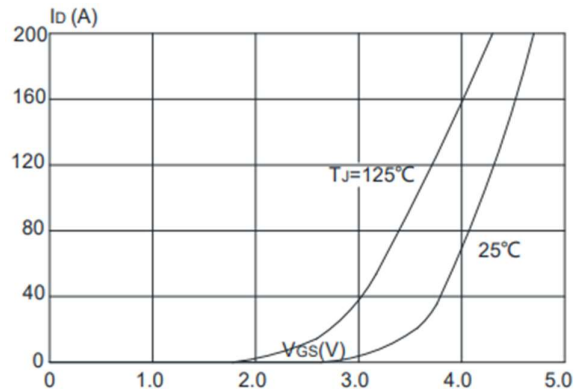


Figure 3: On-resistance vs. Drain Current

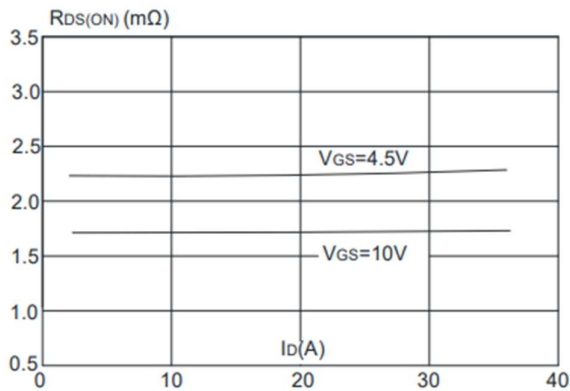


Figure 4: Body Diode Characteristics

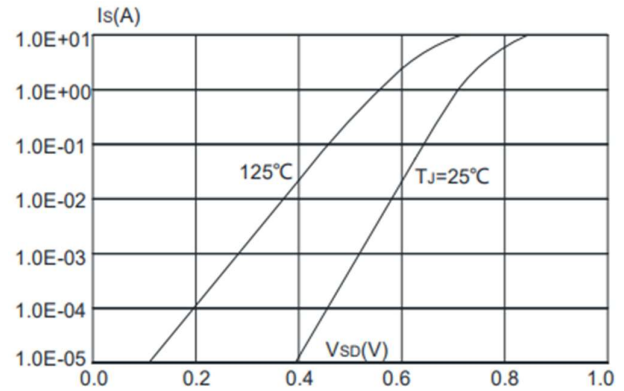


Figure 5: Gate Charge Characteristics

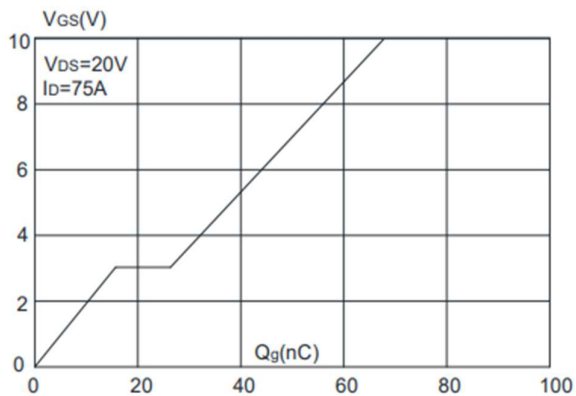


Figure 6: Capacitance Characteristics

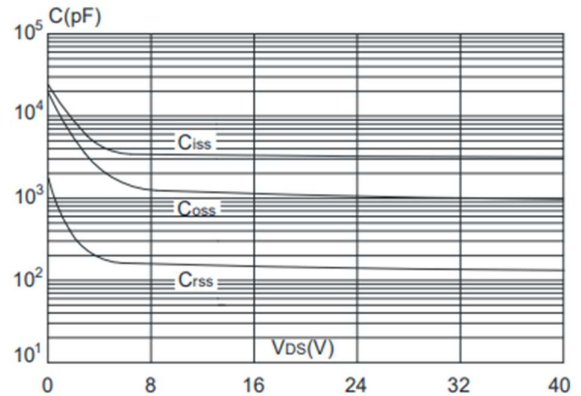


Figure 7 : Normalized Breakdown Voltage vs Junction Temperature.

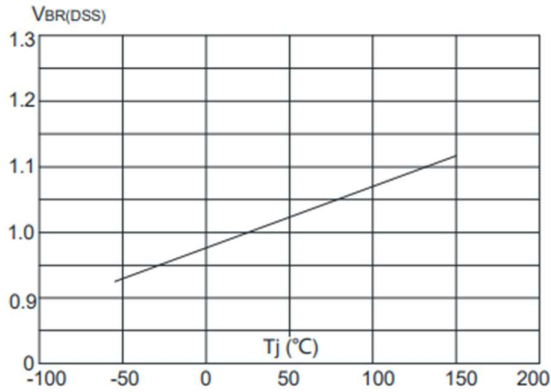


Figure 8: Normalized on Resistance vs. Junction Temperature.

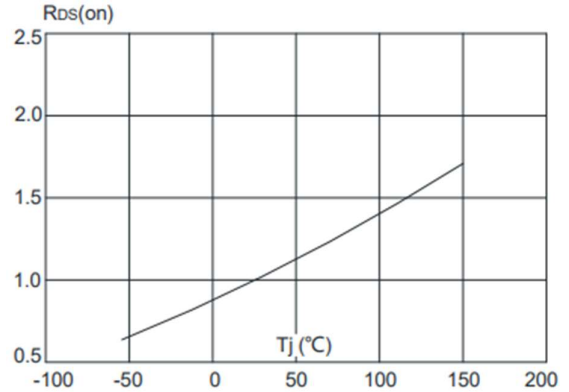


Figure 9: Maximum Safe Operating Area

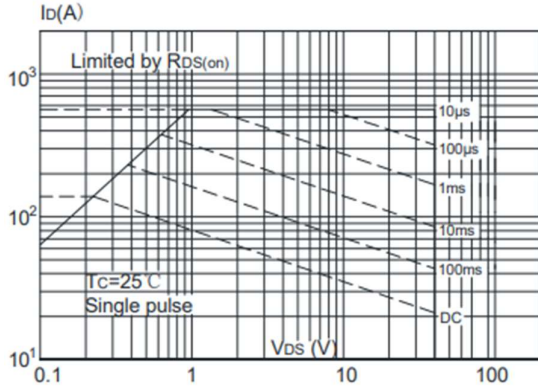


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

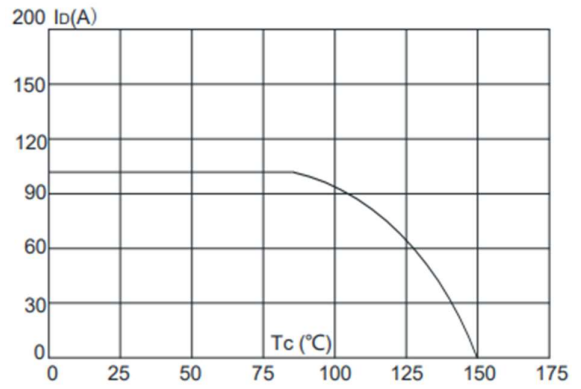
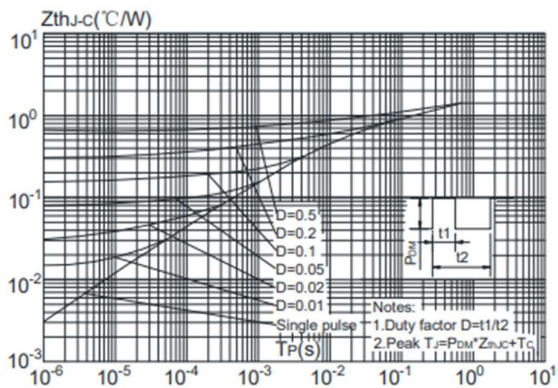


Figure. 11 : Maximum Effective Transient Thermal Impedance, Junction- to- Case



■ Package Information

