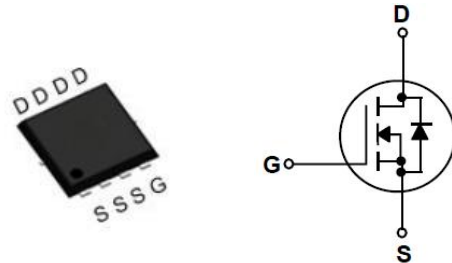


Features

- ◆ 30V, 140A, $R_{DS(ON)}(Typ.) = 1.6m\Omega @ V_{GS} = 10V$
- ◆ Fast switching
- ◆ Advanced Trench Technology
- ◆ Excellent $R_{DS(ON)}$ and Low Gate Charge
- ◆ 100% E_{AS} Guaranteed

Application

- ◆ Load Switch
- ◆ PWM Application
- ◆ Power Management



Absolute Maximum Ratings $T_c = 25^\circ C$ unless otherwise noted

Symbol	Parameter	Rating	Unit
V_{DS}	Drain-Source Voltage ^a	30	V
V_{GS}	Gate-Source Voltage	± 20	
I_D	Drain Current-Continuous	$T_C = 25^\circ C$	A
		$T_C = 100^\circ C$	
I_{DM}	Drain Current-Pulsed ^b	360	
P_D	Maximum Power Dissipation, $T_C = 25^\circ C$	48	W
E_{AS}	Single Pulsed Avalanche Energy ^c	529	mJ
T_J, T_{STG}	Operating and Store Temperature Range	150, -55 to 150	$^\circ C$

Thermal Characteristics

Symbol	Parameter	Value	Unit
$R_{\theta JC}$	Thermal Resistance, Junction to Case	2.6	$^\circ C/W$
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	49	

Electrical Characteristics $T_J = 25^\circ C$ unless otherwise noted

■ Off Characteristics

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS} = 0V, I_D = 250\mu A$	30	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = 30V, V_{GS} = 0V$	-	-	1.0	μA
I_{GSS}	Forward Gate Body Leakage Current	$V_{DS} = 0V, V_{GS} = \pm 20V$	-	-	± 100	nA

■ On Characteristics

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\mu A$	1.0	1.6	2.5	V
$R_{DS(on)}$	Static Drain-Source On-Resistance ^d	$V_{GS} = 10V, I_D = 20A$	-	1.6	2.2	mΩ
		$V_{GS} = 4.5V, I_D = 10A$	-	2.3	3.0	

■ Dynamic Characteristics

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
C_{iss}	Input Capacitance	$V_{DS} = 25V,$ $V_{GS} = 0V,$ $f = 1.0MHz$	-	5700	-	pF
C_{oss}	Output Capacitance		-	528	-	
C_{rss}	Reverse Transfer Capacitance		-	502	-	

■ On Characteristics

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
$t_{d(on)}$	Turn-On Delay Time	$V_{DS} = 15V,$ $V_{GS} = 10V,$ $I_D = 30A,$ $R_G = 3.3\Omega$	-	10	-	ns
t_r	Turn-On Rise Time		-	11	-	
$t_{d(off)}$	Turn-Off Delay Time		-	76	-	
t_f	Turn-Off Fall Time		-	28	-	
Q_g	Total Gate Charge	$V_{DS} = 15V,$ $V_{GS} = 10V,$ $I_D = 40A$	-	110	-	nC
Q_{gs}	Gate-Source Charge		-	21	-	
Q_{gd}	Gate-Drain Charge		-	25	-	

■ Drain-Source Diode Characteristics

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
I_S	Drain-Source Diode Forward Continuous Current	$V_G = V_D = 0V,$ Force Current	-	-	140	A
I_{SM}	Maximum Pulsed Current		-	-	360	
V_{SD}	Drain-Source Diode Forward Voltage	$V_{GS} = 0V, I_S = 20A$	-	-	1.2	V
T_{rr}	Body Diode Reverse Recovery Time	$I_F = 30A,$ $di/dt = 100A/\mu s$	-	22	-	ns
Q_{rr}	Body Diode Reverse Recovery Charge	$I_F = 30A,$ $di/dt = 100A/\mu s$	-	13	-	nC

Notes:

- $T_J = +25^\circ C$ to $+150^\circ C$.
- Repetitive rating: pulse width limited by maximum junction temperature.
- $L = 0.5mH, V_{DD} = 25V, I_{AS} = 46A, R_G = 25\Omega$ Starting $T_J = 25^\circ C$.
- Pulse width $\leq 300\mu s$; duty cycle $\leq 2\%$.

■ Characteristic Curve

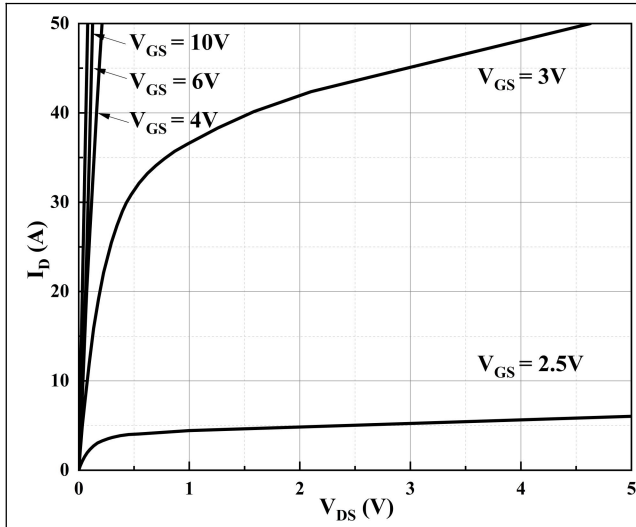


Figure 1. Typical Output Characteristics

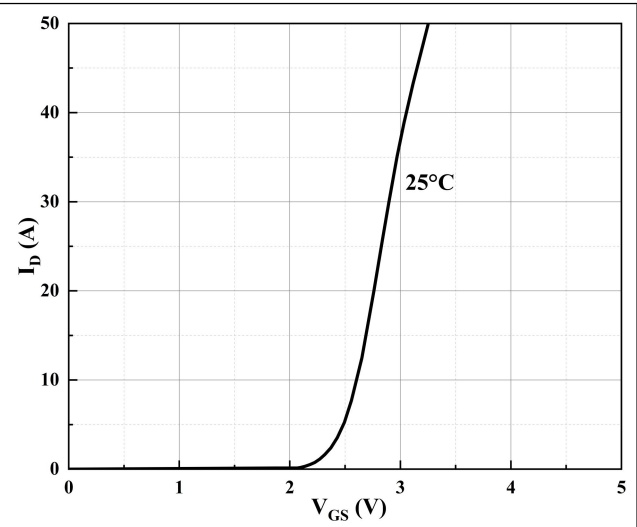


Figure 2. Typical Transfer Characteristics

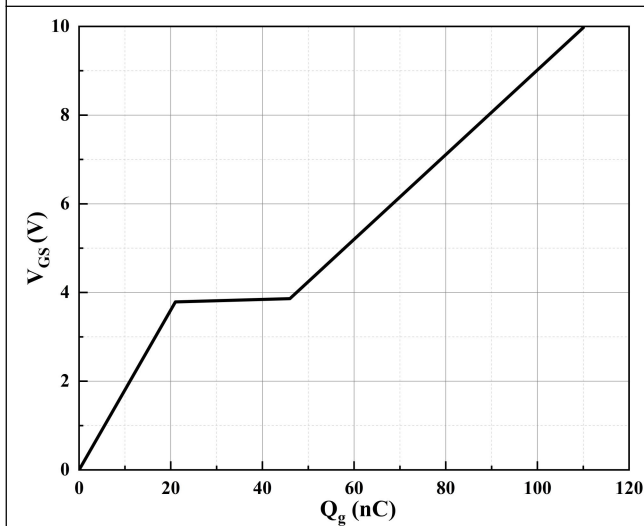


Figure 3. Typical Gate Charge

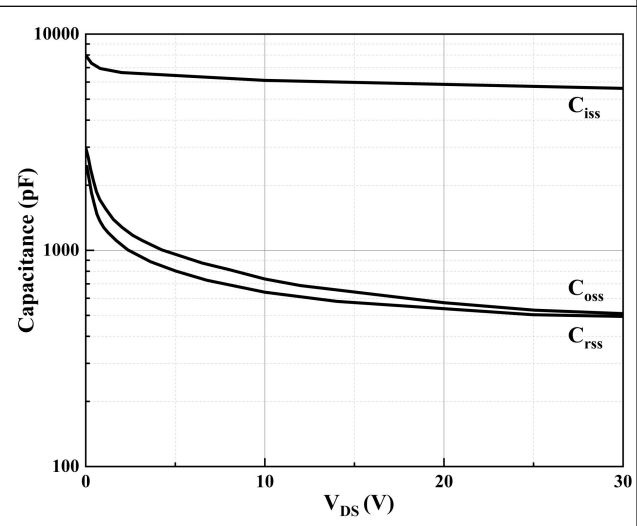


Figure 4. Typical Capacitance

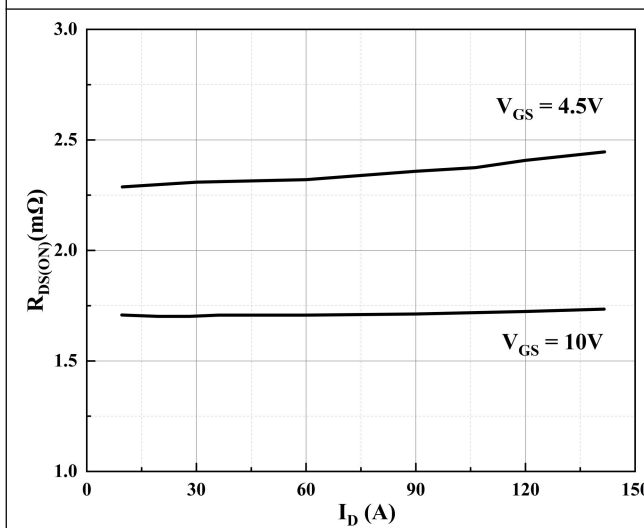


Figure 5. On-resistance vs. Drain Current

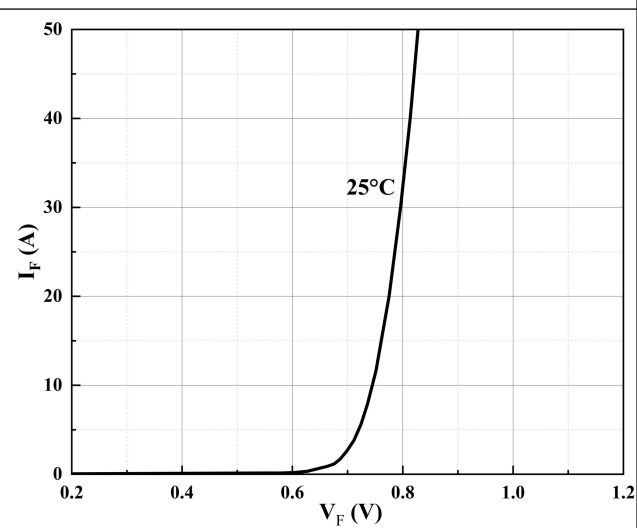


Figure 6. Body Diode Forward Voltage Variation vs. Source Current

■ Characteristic Curve

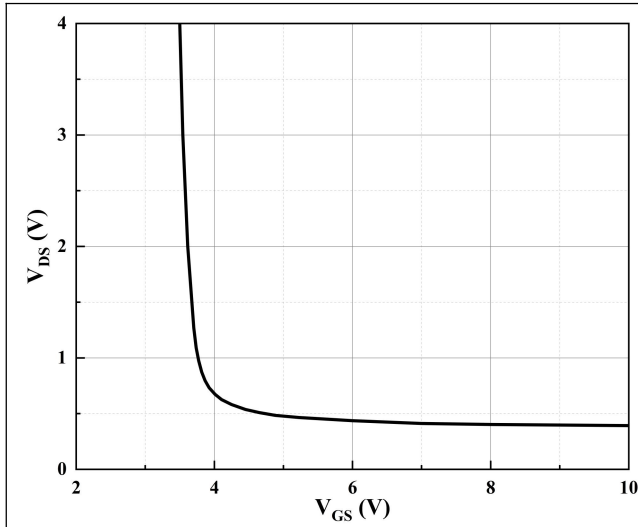


Figure 7. Drain-Source Voltage vs. Gate Voltage

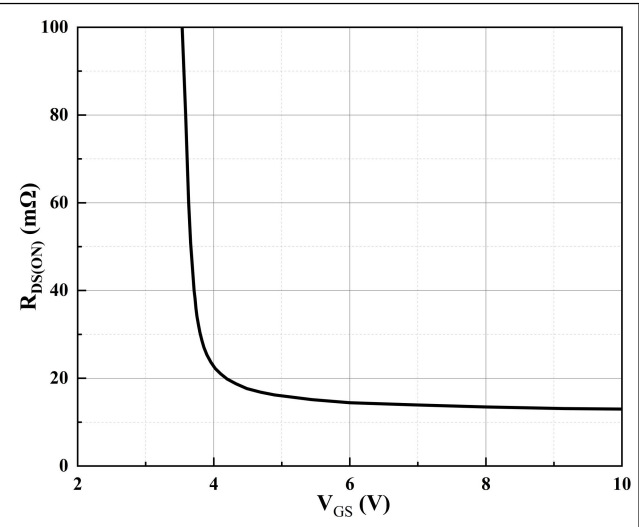


Figure 8. On-resistance vs. Gate Voltage

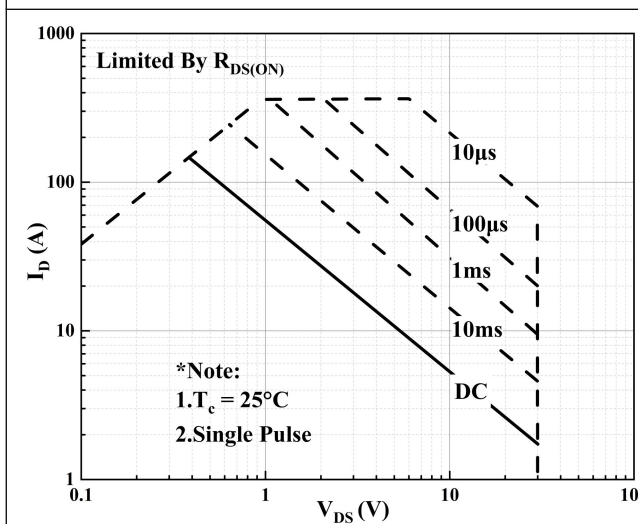


Figure 9. Maximum Safe Operating Area

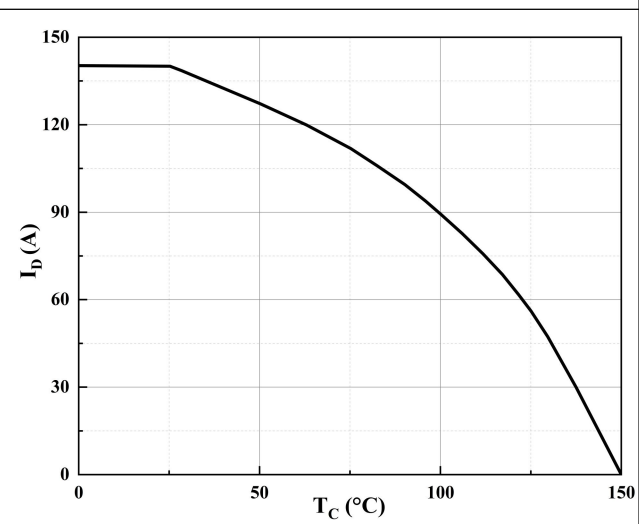


Figure 10. Maximum Continuous Drain Current vs. Case Temperature

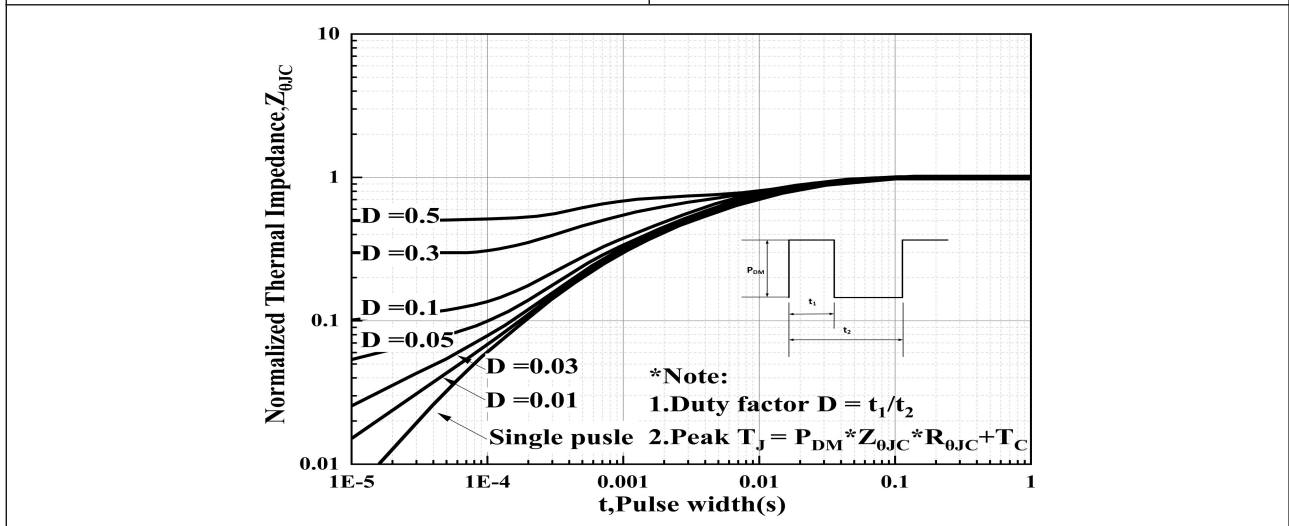
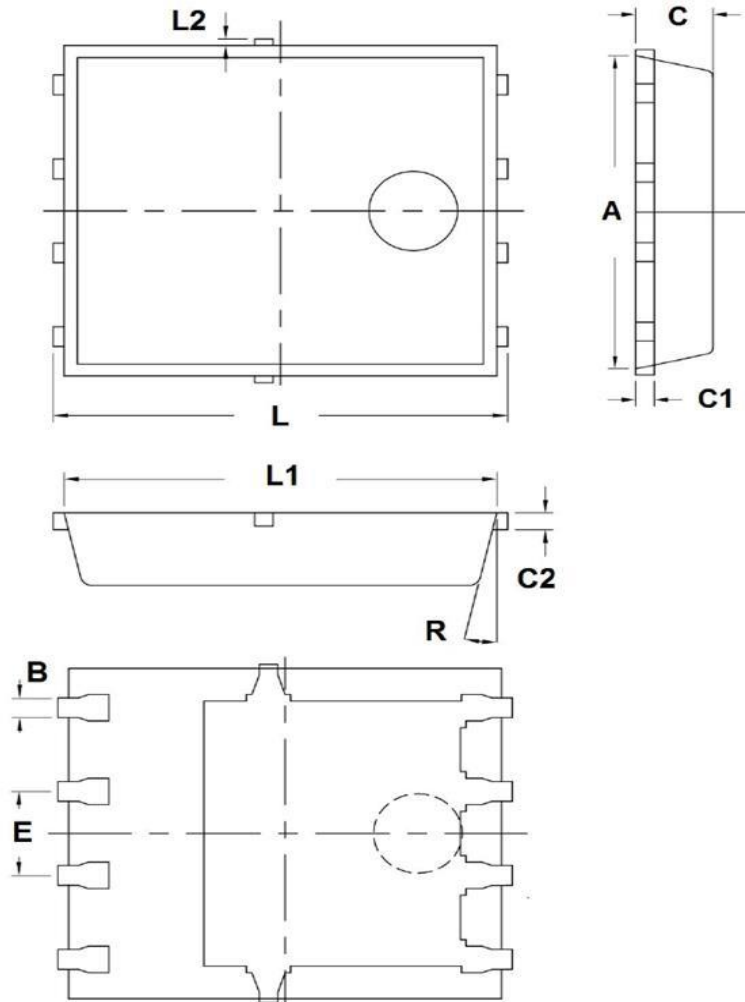


Figure 11. Normalized Maximum Transient Thermal Impedance

■ Package Information

PDFN5×6



Dim.	Min.	Max.
A	4.8	5.2
B	0.25	0.35
C	1.0	1.2
C1	Typ 0.254	
C2	Typ 0.254	
E	Typ 1.27	
L	6.0	6.3
L1	5.7	6.0
L2	MAX 0.2	
R	Typ 13°	