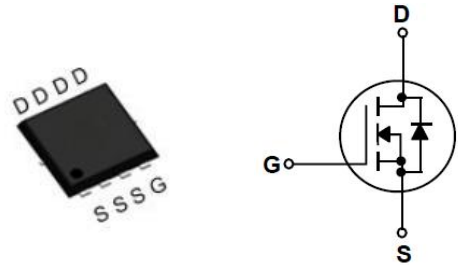


Features

- ◆ 30V, 160A, $R_{DS(ON)}(Typ.) = 1.5m\Omega @ V_{GS} = 10V$
- ◆ Very Low On-Resistance $R_{DS(ON)}$
- ◆ Fast switching
- ◆ 100% avalanche tested
- ◆ Improved dv/dt capability

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	$T_C = 25^\circ C$	160	A
		$T_C = 100^\circ C$	104	
I_{DM}	Drain Current-Pulsed ^b		640	
P_D	Maximum Power Dissipation @ $T_J = 25^\circ C$		50	W
E_{AS}	Single Pulsed Avalanche Energy ^d		625	mJ
T_J, T_{STG}	Operating and Store Temperature Range		150, -55 to 150	$^\circ C$

Thermal Characteristics

Symbol	Parameter	Rating	Unit
$R_{\theta JC}$	Thermal Resistance Junction-Case	2.5	$^\circ C/W$
$R_{\theta JA}$	Thermal Resistance Junction-Ambient ^c	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	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	1.6	2.2	V
$R_{DS(on)}$	Static Drain-Source On-Resistance ^c	$V_{GS} = 10V, I_D = 20A$	-	1.5	2.0	mΩ
		$V_{GS} = 4.5V, I_D = 15A$	-	2.2	3.0	

■ Dynamic Characteristics

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
C_{iss}	Input Capacitance	$V_{DS} = 30V,$ $V_{GS} = 0V,$ $f = 1MHz$	-	7710	-	pF
C_{oss}	Output Capacitance		-	845	-	
C_{rss}	Reverse Transfer Capacitance		-	838	-	

■ On Characteristics

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
$t_{d(on)}$	Turn-On Delay Time	$V_{DS} = 30V,$ $V_{GS} = 10V,$ $I_D = 30A,$ $R_G = 1.8\Omega$	-	18	-	ns
t_r	Turn-On Rise Time		-	10	-	
$t_{d(off)}$	Turn-Off Delay Time		-	64	-	
t_f	Turn-Off Fall Time		-	16	-	
Q_g	Total Gate Charge	$V_{DS} = 15V,$ $V_{GS} = 10V,$ $I_D = 30A$	-	136	-	nC
Q_{gs}	Gate-Source Charge		-	42	-	
Q_{gd}	Gate-Drain Charge		-	16	-	

■ Drain-Source Diode Characteristics

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
I_S	Maximum Continuous Drain-Source Diode Forward Current	$V_{GS} = 0V$	-	-	160	A
I_{SM}	Maximum Pulsed Drain-Source Diode Forward Current	$V_{GS} = 0V$	-	-	640	
V_{SD}	Drain-Source Diode Forward Voltage	$V_{GS} = 0V, I_{SD} = 20A$	-	-	1.2	V
T_{rr}	Body Diode Reverse Recovery Time	$I_F = 20A,$ $di_F/dt = 100A/\mu s$	-	30	-	ns
Q_{rr}	Body Diode Reverse Recovery Charge	$I_F = 20A,$ $di_F/dt = 100A/\mu s$	-	22	-	nC

Notes:

- $T_J = +25\text{ }^{\circ}\text{C}$ to $+150\text{ }^{\circ}\text{C}$
- Repetitive rating; pulse width limited by maximum junction temperature.
- Pulse width $\leq 300\mu s$; duty cycle $\leq 2\%$
- $L = 0.5mH, V_{DD} = 25V, I_{AS} = 50A, R_G = 25\Omega$ Starting $T_J = 25\text{ }^{\circ}\text{C}$.

■ Characteristic Curve

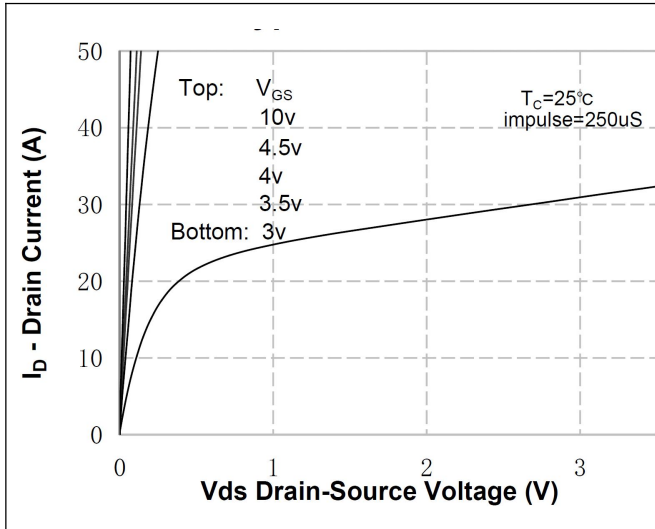


Figure 1. On-Region Characteristics

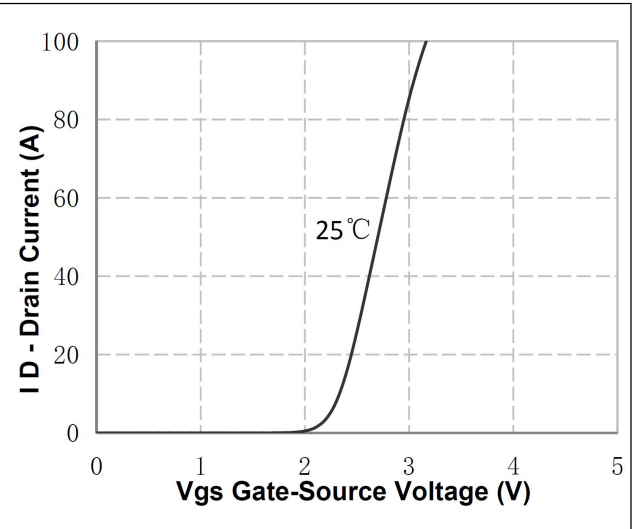


Figure 2. Transfer Characteristics

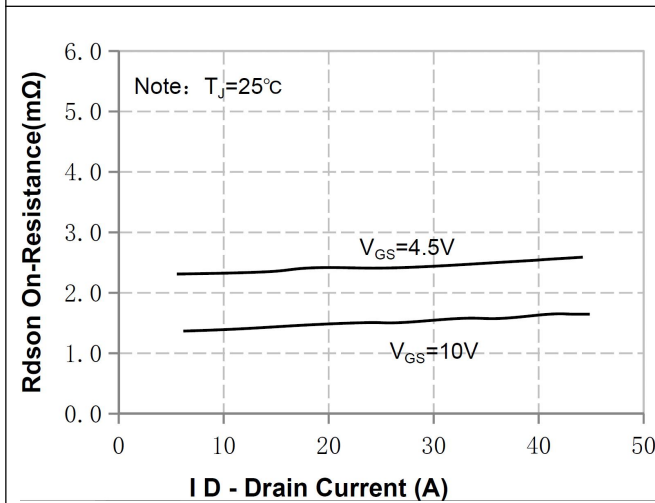


Figure 3. On-Resistance Variation vs Drain Current and Gate Voltage

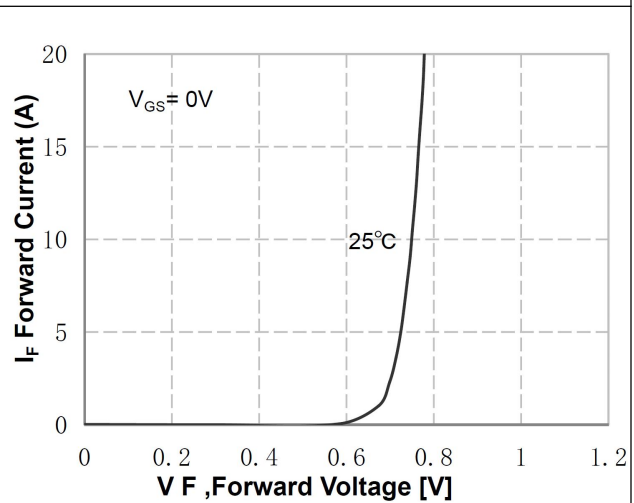


Figure 4. Body Diode Forward Voltage Variation with Source Current and Temperature

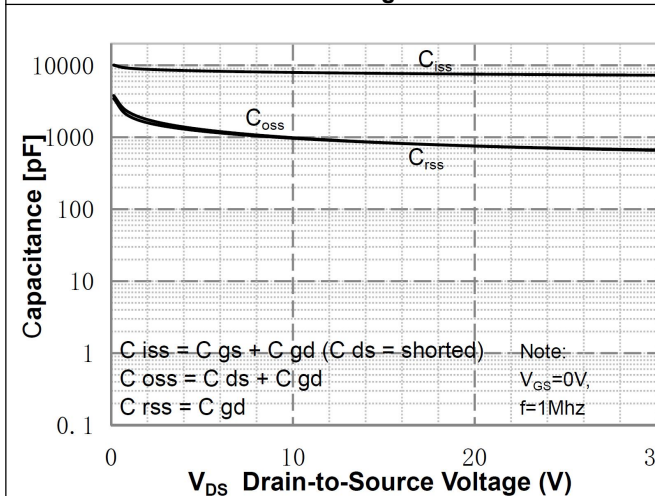


Figure 5. Capacitance Characteristics

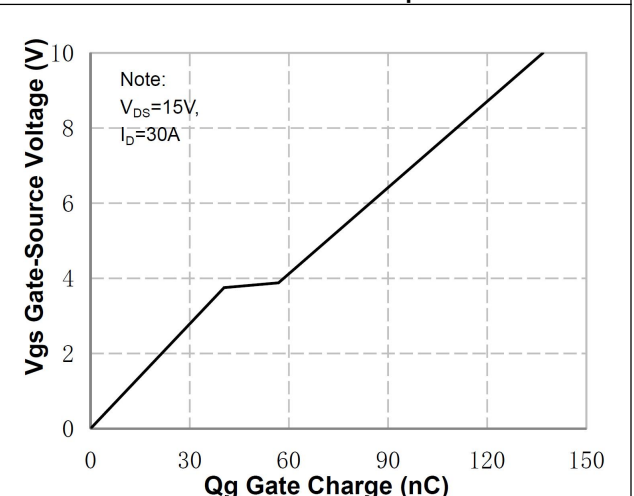


Figure 6. Gate Charge Characteristics

■ Characteristic Curve

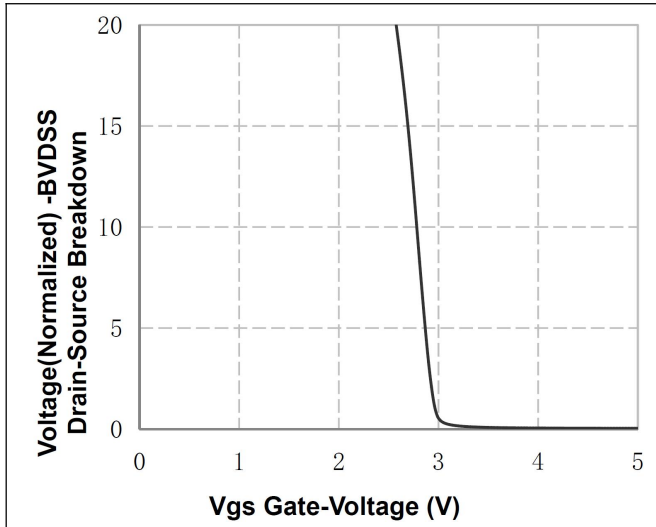


Figure 7. Breakdown Voltage Variation vs Gate-Voltage

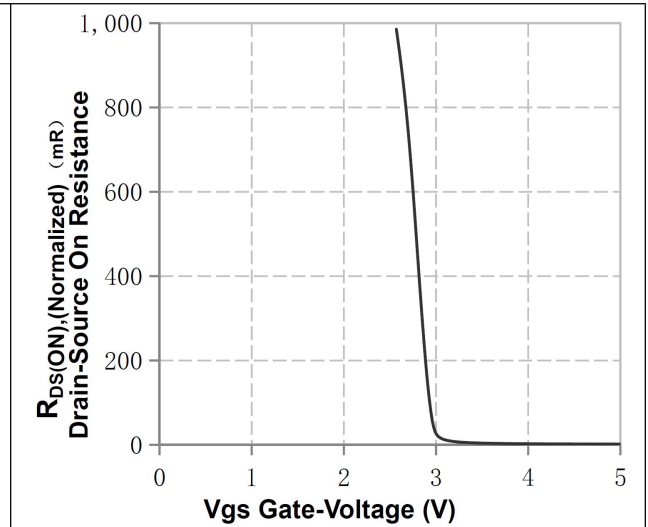


Figure 8. On-Resistance Variation vs Gate Voltage

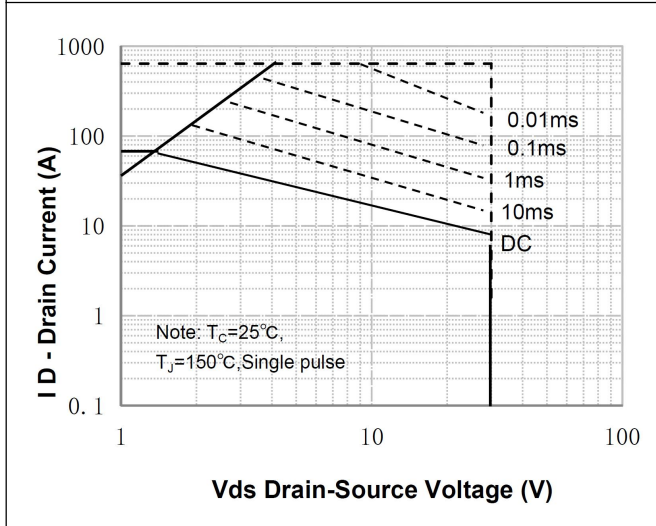


Figure 9. Maximum Safe Operating Area

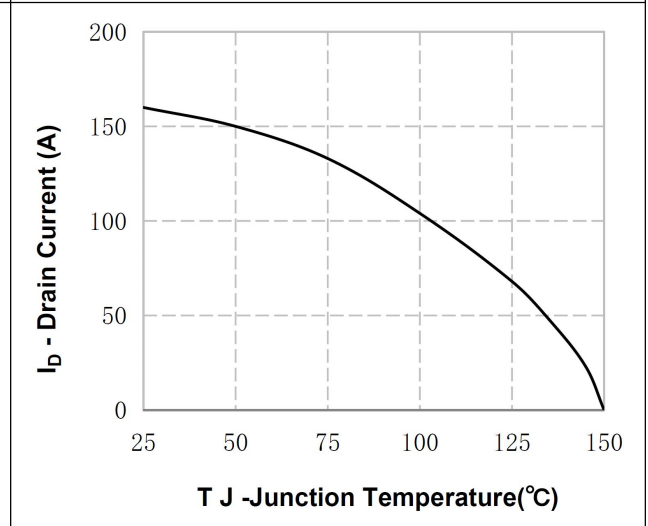


Figure 10. Maximum Continuous Drain Current vs Case Temperature

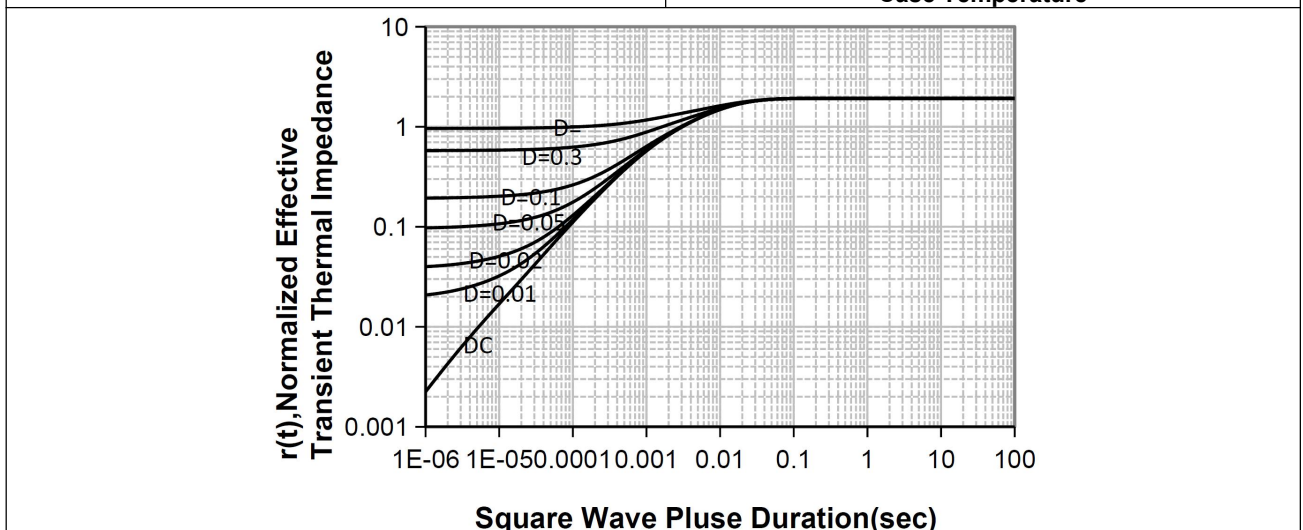
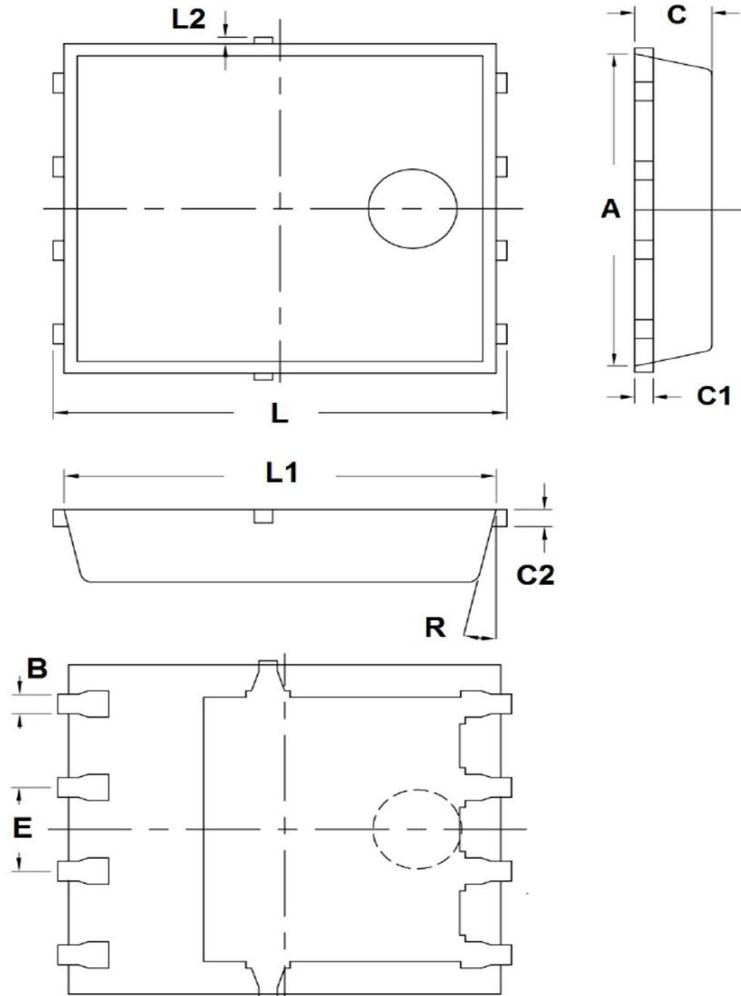


Figure 11. Transient Thermal Response Curve

■ 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°	