

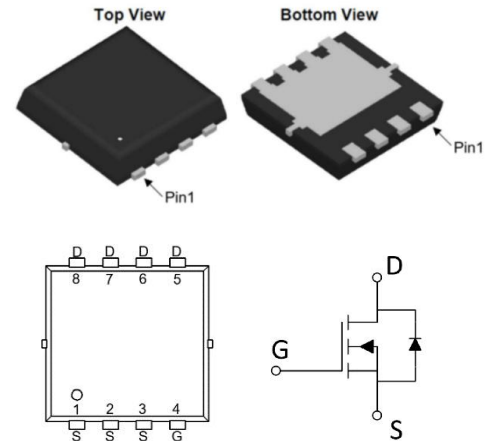
Features

- $V_{DS}=40V, I_D=45A$
- $R_{DS(ON)}=6.8m\Omega$ (TYP.) $V_{GS}=10V, I_D=1A$
- $R_{DS(ON)}=8m\Omega$ (TYP.) $V_{GS}=4.5V, I_D=1A$
- Reliable and Rugged
- Avalanche Rated
- Low On-Resistance

Applications

- Load Switch
- Power management in portable/desktop PCs
- DC/DC conversion

PDFN3030



Ordering Information

Temperature Range	package		Orderable Device	Package Qty.
-55°C~+125°C	PDFN3030	Pb-Free	SWT40N45D3	5000pcs/Reel

Absolute Maximum Ratings ($T_C=25^\circ C$, unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage ($V_{GS}=0V$)	V_{DS}	40	V
Gate-Source Voltage ($V_{GS}=0V$, static)	V_{GS}	± 20	V
Continuous Drain Current ($T_C=25^\circ C$)	I_D	45	A
Continuous Drain Current ($T_C=100^\circ C$)		28	A
Continuous Drain Current ($T_A=25^\circ C$)	I_D	20	A
Continuous Drain Current ($T_A=70^\circ C$)		14	A
Pulsed Drain Current	I_{DM}	180	A
Avalanche Current	I_{AS}	32	A
Single Pulsed Avalanche Energy	E_{AS}	53	mJ
Maximum Power Dissipation ($T_C=25^\circ C$)	P_D	38	W
Maximum Power Dissipation ($T_C=100^\circ C$)		22	W
Maximum Power Dissipation ($T_A=25^\circ C$)	P_D	4.2	W
Maximum Power Dissipation ($T_A=70^\circ C$)		2.6	W
Operating, Storage Temperature Range	T_J, T_{STG}	-55~150	$^\circ C$

Thermal Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal Resistance,Junction-to-Case	$R_{\theta JC}$	-	3.9	-	$^{\circ}\text{C}/\text{W}$
Thermal Resistance,Junction-to-Ambient	$R_{\theta JA}$	-	35	-	$^{\circ}\text{C}/\text{W}$

Electrical Characteristics

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	40	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=40V, V_{GS}=0V$	-	-	1	μA
Gate -Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.2	1.7	2.2	V
Drain-Source On-stage Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=1A$	-	6.8	8	m Ω
		$V_{GS}=4.5V, I_D=1A$	-	8	9.5	

Dynamic Characteristics

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Input capacitance	C_{iss}	$V_{DS}=15V$	-	1037	-	pF
Output capacitance	C_{oss}	$V_{GS}=0V$	-	189	-	
Reverse transfer capacitance	C_{rss}	$f=1MHz$	-	29	-	
Gate Resistance	R_g	$f=1MHz$	-	2.5	-	Ω
Total Gate Charge	Q_g	$V_{DS}=15V$	-	14.2	-	nC
Gate Source Charge	Q_{gs}	$V_{GS}=10V$	-	3.2	-	
Gate Drain Charge	Q_{gd}	$I_D=15A$	-	1.3	-	
Turn-on delay Time	$t_{d(on)}$	$V_{GS}=10V$	-	8	-	ns
Rise time	t_r	$V_{DS}=15V$	-	15	-	
Turn-off delay Time	$t_{d(off)}$	$R_L=2\Omega$	-	18	-	
Fall time	t_f	$R_G=3\Omega$	-	7	-	

Reverse Diode Characteristics

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Body Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_{SD}=1A$	-	0.7	1	V
Reverse Recovery Time	t_{rr}	$V_{GS}=0V, I_{SD}=15A$	-	14	-	ns
Reverse Recovery Charge	Q_{rr}	$d_i/d_t=100A/\mu s$	-	11	-	nC

Electrical Characteristics Diagrames

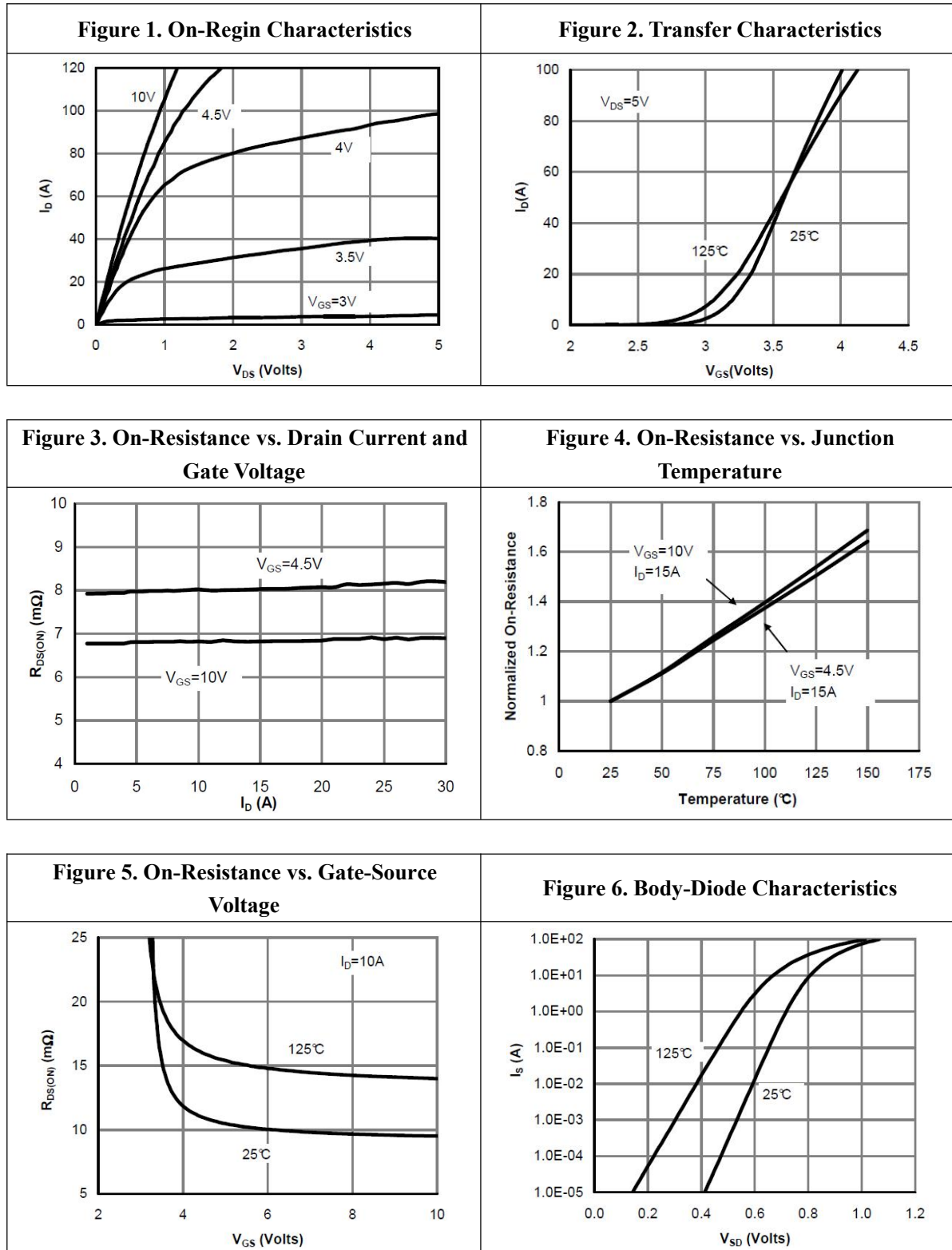


Figure 7. Gate-Charge Characteristics

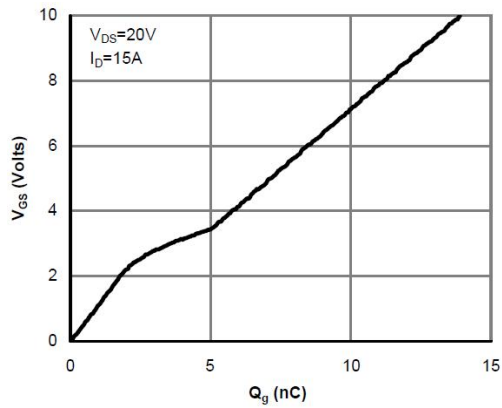


Figure 8. Capacitance Characteristics

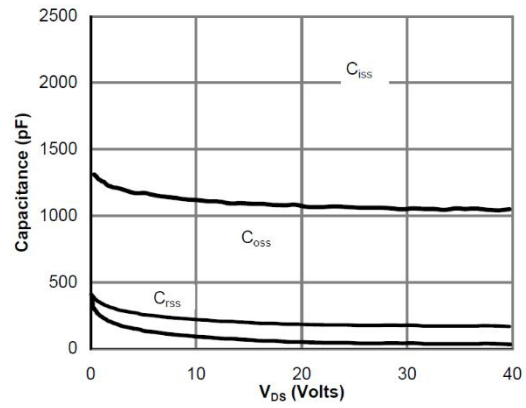


Figure 9. Maximum Forward Biased Safe Operating Area

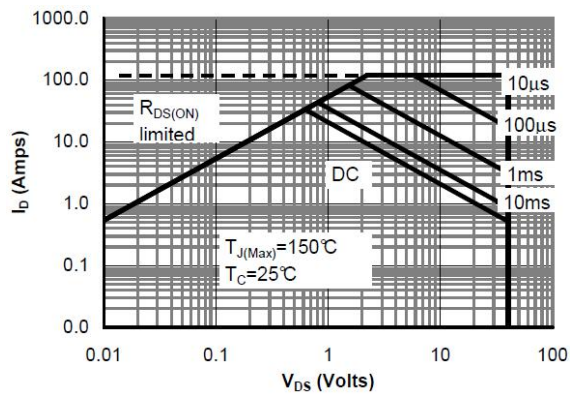


Figure 10. Single Pulse Power Rating Junction-to-Ambient

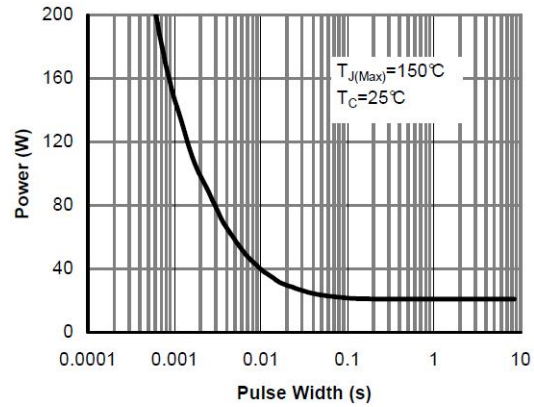
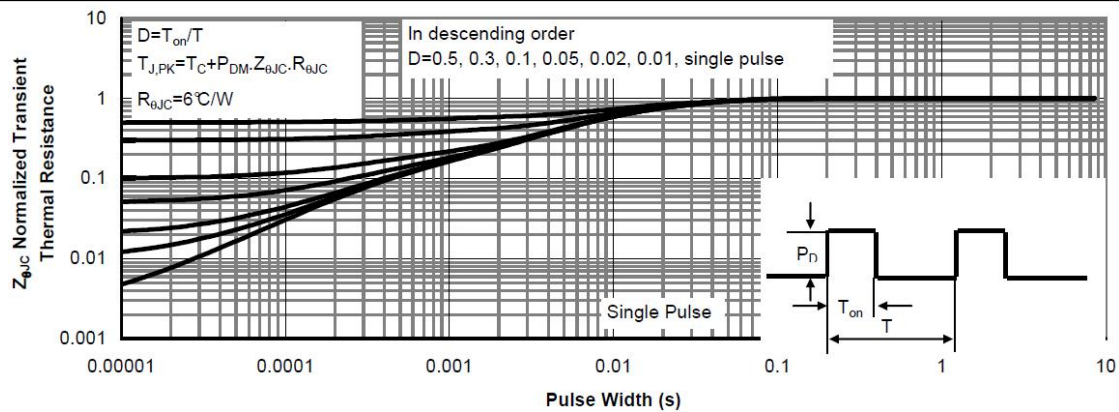
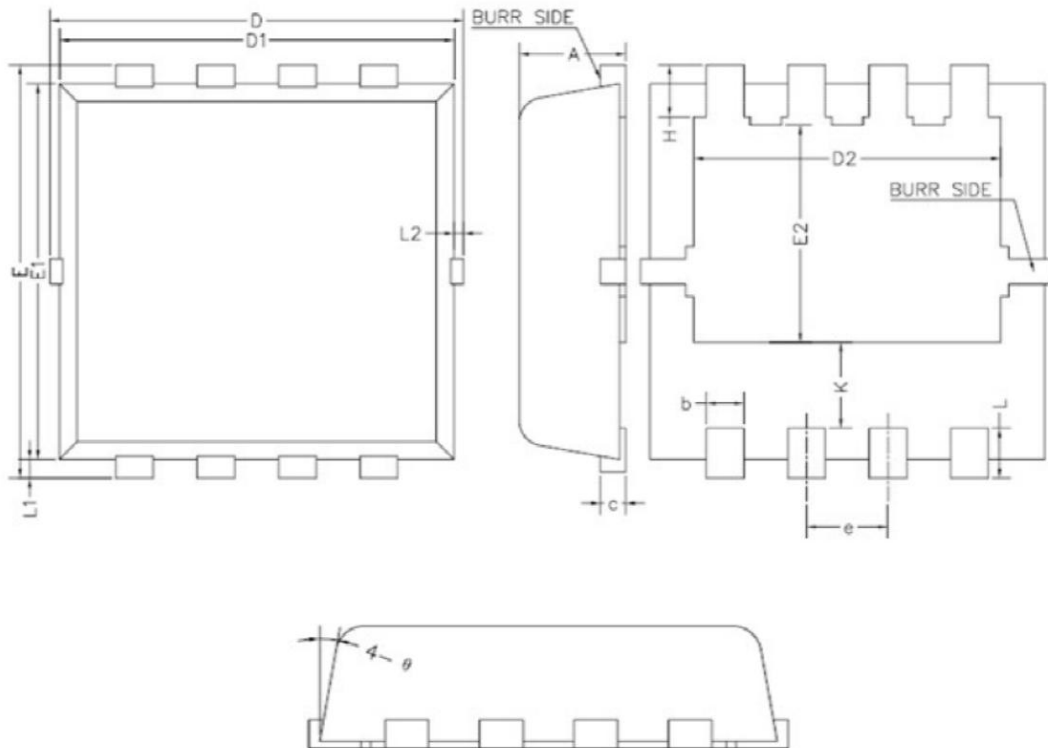


Figure 11. Normalized Maximum Transient Thermal Impedance



Physical Dimensions

PDFN3030



符号	尺寸 (mm)			符号	尺寸 (mm)		
	最小值	典型值	最大值		最小值	典型值	最大值
A	0.70	0.80	0.90	E1	2.90	3.00	3.10
b	0.25	0.30	0.35	E2	1.64	1.74	1.84
c	0.14	0.15	0.20	H	0.32	0.42	0.52
D	3.10	3.30	3.50	K	0.59	0.69	0.79
D1	3.05	3.15	3.25	L	0.25	0.40	0.55
D2	2.35	2.45	2.55	L1	0.10	0.15	0.20
e	0.55	0.65	0.75	L2	-	-	0.15
E	3.10	3.30	3.50	θ	8°	10°	12°