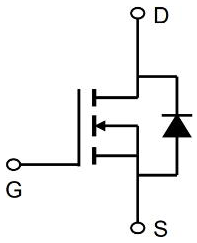
30V，170A，N Enhancement MOSFET

Features

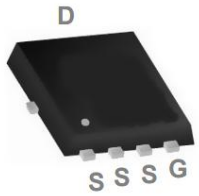
- Advanced trench technology
- Excellent RDS(ON)
- Super Low Gate Charge
- 100% UIS Tested
- Extremely high cell density
- Qualified according to JEDEC for target applications



Schematic Diagram

Applications

- DC/DC Converter
- High Frequency Point-of-Load Synchronous Buck Converter



PDFN 5X6

Key Performance and Package Parameters

Type	V_{DS}	I_D	Rdson, VGS=10V (Typ.)	Package
SS170N03	30V	170A	1.3mΩ	PDFN 5X6

Maximum Ratings

Parameter	Symbol	Value	Unit
Drain to Source Voltage	V_{DSS}	30	V
Gate to Source Voltage	V_{GSS}	20	V
Drain Current (DC,VGS=10V)(TC=25℃)	I_D	170	A
Drain Current (DC,VGS=10V)(TC=100℃)	I_D	107	A
Drain Current (DC,VGS=10V)(TA=25℃)	I_D	32	A
Drain Current (DC,VGS=10V)(TA=70℃)	I_D	25	A
Drain Current (Pulse) PW≤300μs,duty cycle ≦ 2%	I_{DP}	340	A
Total Dissipation	P_D	95	W
Avalanche Energy, Single Pulsed	E_{AS}	245	mJ
Junction Temperature	T_j	150	C
Storage Temperature	Tstg	-55 to +150	C

Note 1 : Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

Thermal Resistance

Characteristic	Symbol	Conditions	Max. Value	Unit
Junction to Ambient (Note 2)	$R_{\theta JA}$		62	℃/W
Junction to case	$R_{\theta JC}$		1.31	℃/W

Note 2 :When mounted on 1 inch square copper board t≤10sec The value in any given application depends on the user's specific board design.

Electrical Characteristic, at Tj = 25°C, unless otherwise specified

Parameter	Symbol	Conditions	Value			Unit
			min.	typ.	max.	
Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	ID = 250uA,VGS = 0 V	30			V
Zero-Gate Voltage Drain Current	I_{DSS}	VDS = 30V,VGS = 0 V			1	μA
Gate to Source Leakage Current	I_{GSS1}	VGS = ±20V,VSS = 0 V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	VDS=VGS,IDS = 250uA	1.2		2.5	V
Static Drain to Source On-State Resistance	$R_{DS(on)}$	ID = 50 A,VGS = 10 V		1.3	1.65	mΩ
		ID = 50 A,VGS = 4.5 V		1.9	2.5	mΩ
Input Capacitance	C_{iss}	VGS=0V, VDS=15V, Frequency=1.0MHz		3.05		nF
Output Capacitance	C_{oss}			1.3		nF
Reverse Transfer Capacitance	C_{rss}			28		pF
Turn-ON Delay Time	$td_{(on)}$	VDD=15V,IDS=15A, VGEN=10V,RG=3Ω		11.2		ns
Rise Time	t_r			39.3		ns
Turn-OFF Delay Time	$td_{(off)}$			33.5		ns
Fall Time	t_f			8.8		ns
Total Gate Charge(10V)	Q_g	VDS=15V,VGS=10V, IDS=15A		41.6		nC
Total Gate Charge(4.5V)	Q_g	VDS=15V,VGS=4.5V, IDS=15A		19.8		nC
Gate-Source Charge	Q_{gs}			8.1		nC
Gate-Drain Charge	Q_{gd}			6.4		nC
Diode Forward Voltage	V_{SD}	IS=30A,VGS=0	0.4		1.2	V
Reverse Recovery Time	t_{rr}	IF=15A,dI/dt=100A/μs		155		nS
Reverse Recovery Charge	Qrr			192		nC

Typical electrical and thermal characteristics：

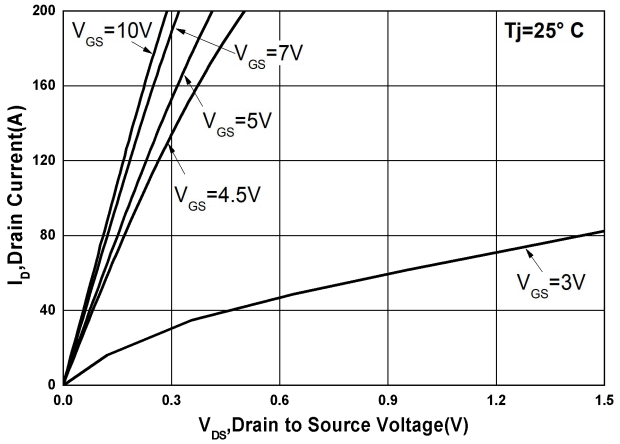


Figure 1: Typical Output Characteristic

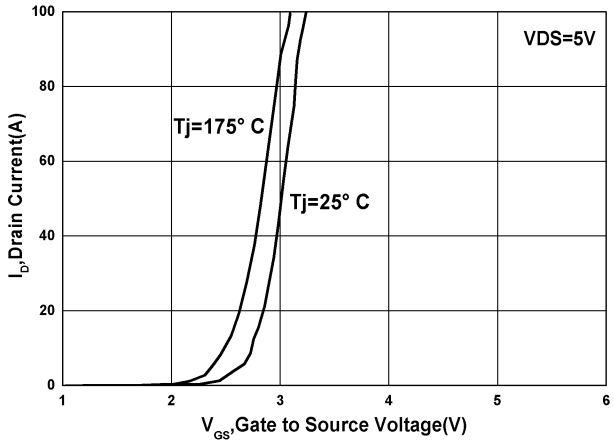


Figure 2: Typical Transfer Characteristics

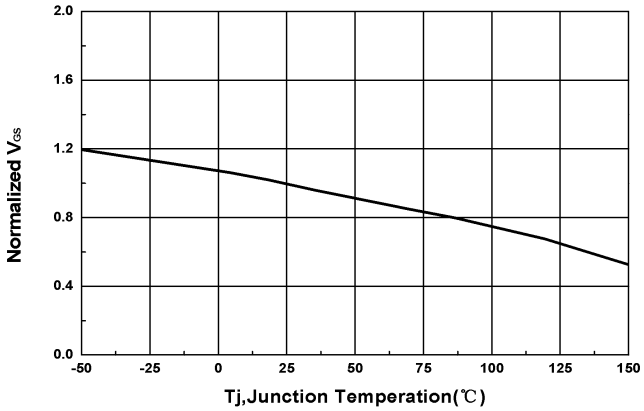


Figure 3: Normalized VGS vs Tj

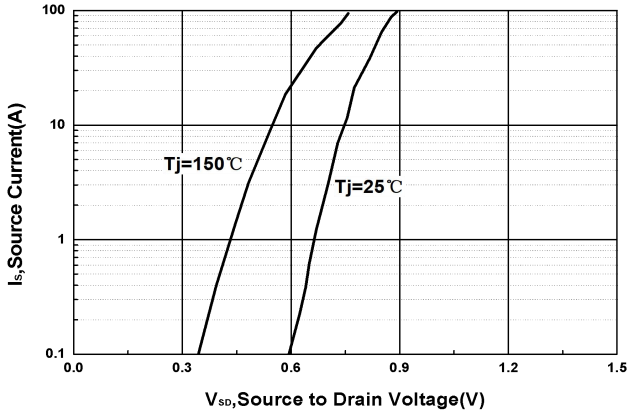


Figure 4: IS vs VSD

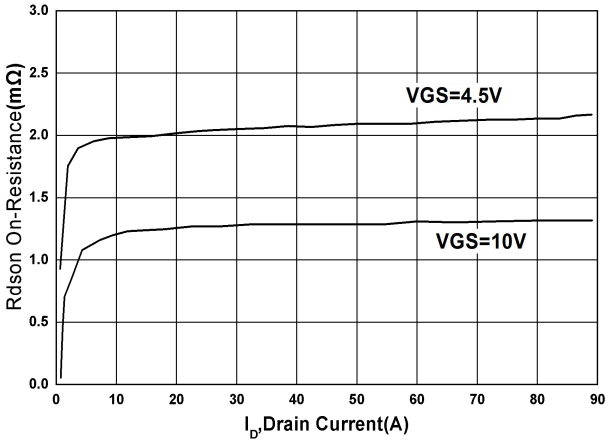


Figure 5: Rdson vs ID

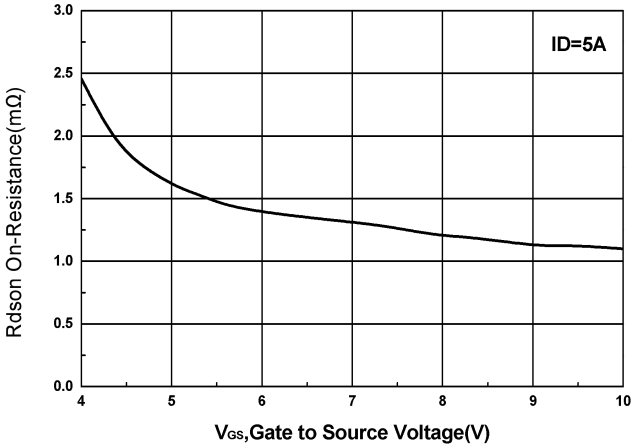


Figure 6: Rdson vs VGS

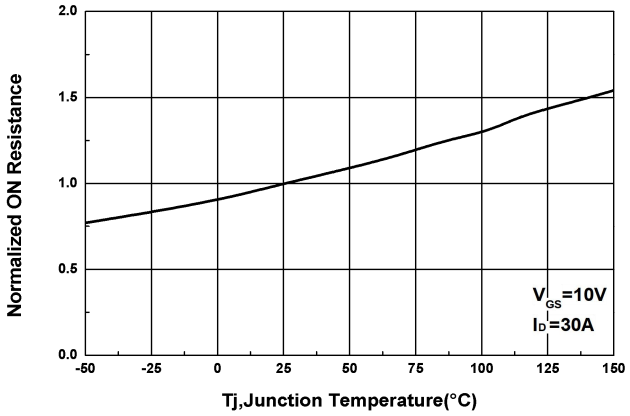


Figure 7: Normalized Rdson vs Tj

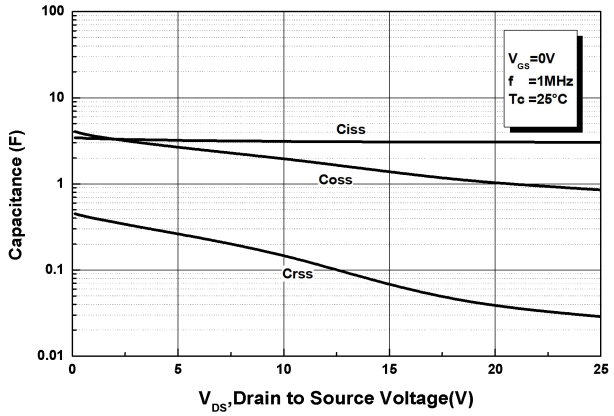


Figure 8: Capacitance vs. VDS

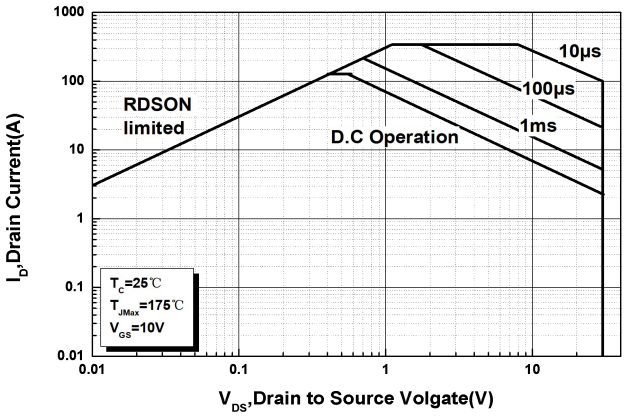


Figure 9: Maximum Forward Biased Safe Operating Area

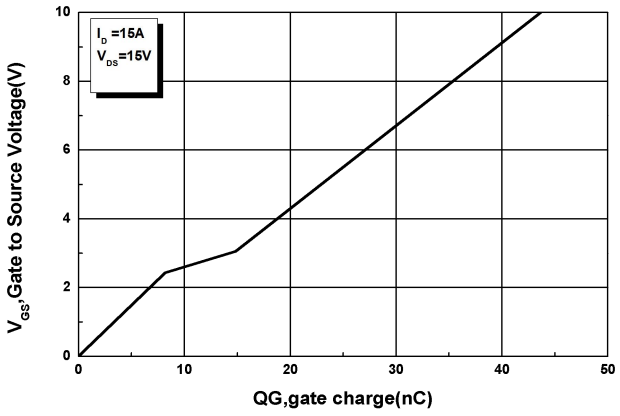


Figure 10: Gate Charge Characteristics

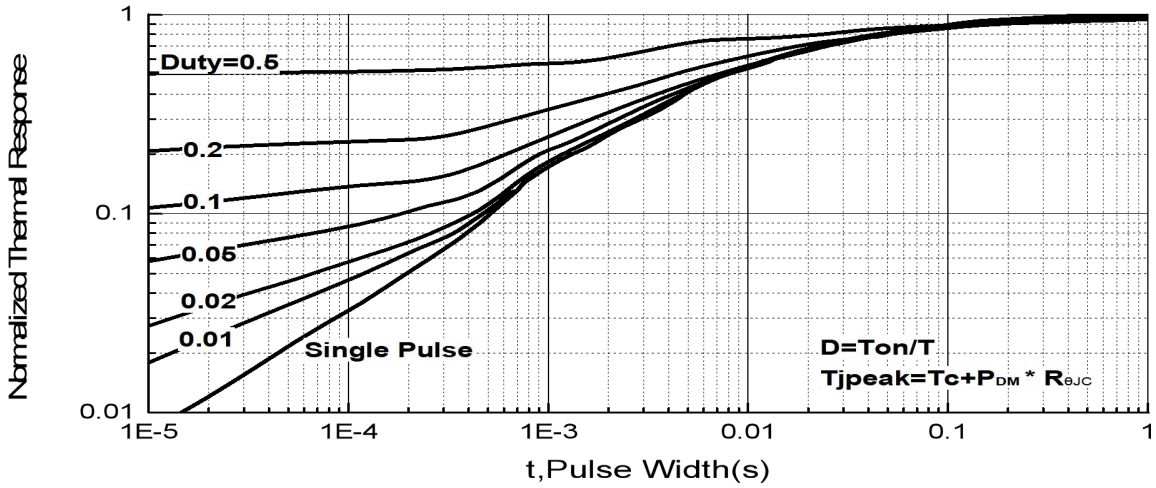
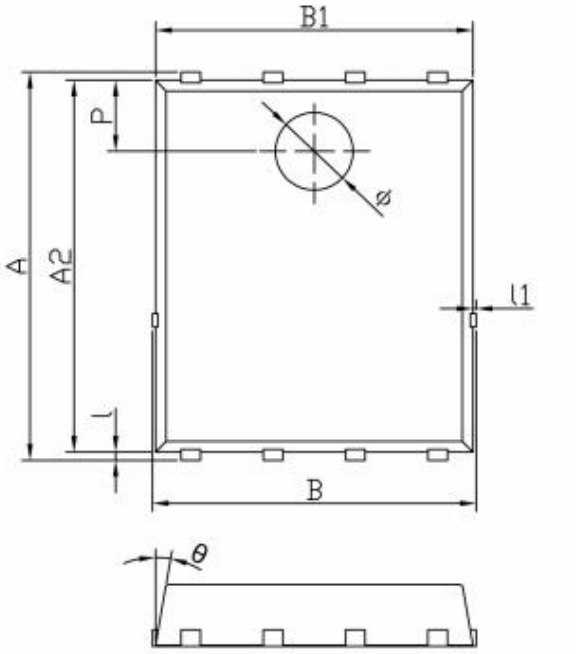
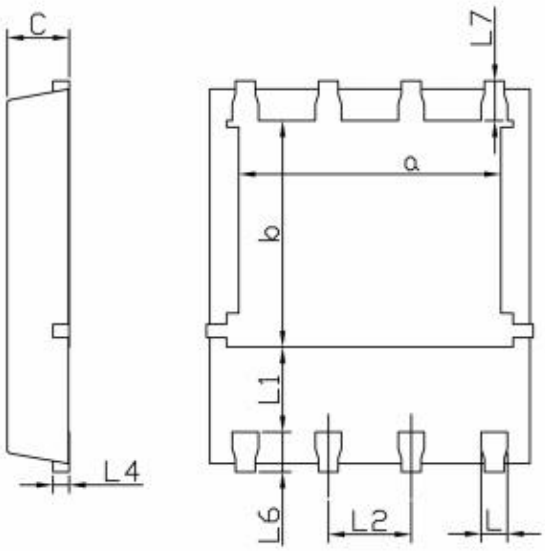


Figure 11: Normalized Thermal Response

Mechanical Data：PDFN5X6





Dimensions In Millimeterer			
Symbol	MIN	TYP	MAX
A	5.90	6.00	6.10
a	3.91	4.01	4.11
A2	5.70	5.75	5.80
B	4.90	5.00	5.10
b	3.37	3.47	3.57
B1	4.80	4.90	5.00
C	0.90	0.95	1.00
L	0.35	0.40	0.45
l	0.06	0.13	0.20
L1	1.10	-	-
l1	-	-	0.10
L2	1.17	1.27	1.37
L4	0.21	0.26	0.34
L6	0.51	0.61	0.71
L7	0.51	0.61	0.71
P	1.00	1.10	1.20
θ	8°	10°	12°
Φ	1.10	1.20	1.30