Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
30V	1.7mΩ@10V	115A
	3mΩ@4.5V	

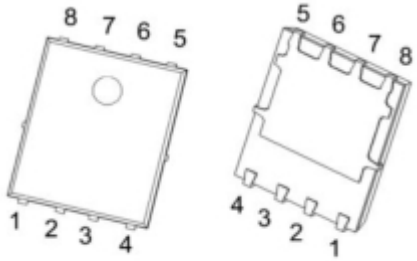
Feature

- $R_{DS(ON)}$=1.7mΩ (Typ.) @ V_{GS} =10V
- $R_{DS(ON)}$=3mΩ (Typ.) @ V_{GS} =4.5V
- Advanced Trench Technology
- Provide Excellent $R_{DS(ON)}$ and Low Gate Charge

Application

- Load Switch
- PWM Application

Package



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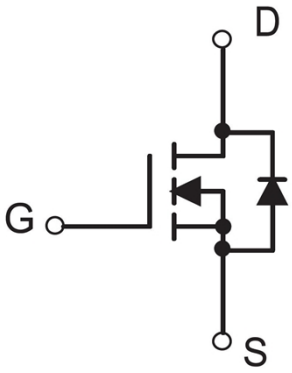
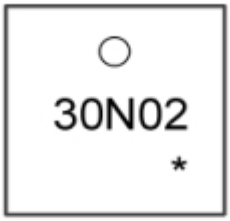
Circuit diagram



Marking



30N02 : Product code
* : Month code.

Absolute maximum ratings

(T_a=25℃ unless otherwise noted)

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	T_C = 25℃	I_D	115	A
Pulsed Drain Current note1		I_{DM}	460	A
Single Pulsed Avalanche Energy note2		E_{AS}	650	mJ
Power Dissipation	T_C = 25℃	P_D	110	W
Thermal Resistance, Junction to Case		$R_{\theta JC}$	1.13	℃/W
Operating and Storage Temperature Range		T_{STG}, T_J	-55 to +150	℃

Electrical characteristics

(T_A=25℃, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	$BV_{(BR)DSS}$	V_{GS} = 0V, I_D =250μA	30			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =30V,V_{GS} = 0V			1	uA
Gate-body leakage current	I_{GSS}	V_{GS} =±20V , V_{DS}=0V			±100	uA
On Characteristics						
Gate-source threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	1	1.5	2.5	V
Static Drain-Source on-Resistance note3	$R_{DS(on)}$	V_{GS} =10V, I_D =30A		1.7	2.2	mΩ
		V_{GS} =4.5V, I_D =20A		3	4	
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS}=25V, V_{GS}=0V, f=1MHz		3400		pF
Output Capacitance	C_{oss}			356		
Reverse Transfer Capacitance	C_{rss}			308		
Total Gate Charge	Q_g	V_{DS}=15V, I_D =30A, V_{GS}=10V		70		pF
Gate-Source Charge	Q_{gs}			12		
Gate-Drain Charge	Q_{gd}			16.3		
Switching Characteristics						
Turn-On Delay Time	$T_{d(on)}$	V_{DD}=15V, I_D =30A, R_{GEN}=1.8Ω, V_{GS}=4.5V		11		nS
Rise Time	T_r			120		
Turn-Off Delay Time	$T_{d(off)}$			25		
Fall Time	T_f			60		
Drain-Source Diode Characteristics and Maximum Ratings						
Drain to Source Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_S=1A			1.2	V

Note：

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
2. E_{AS} condition: Tj=25℃, V_G=10V,L=0.5mH,Rg=25Ω
3. Pulse Test: Pulse Width≤300μs, Duty Cycle≤2%

Typical Characteristics

Figure1: Output Characteristics

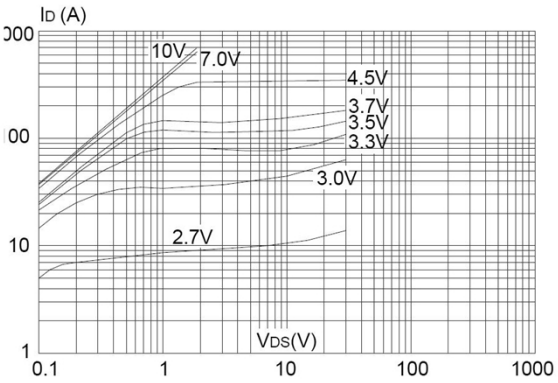


Figure 2: Typical Transfer Characteristics

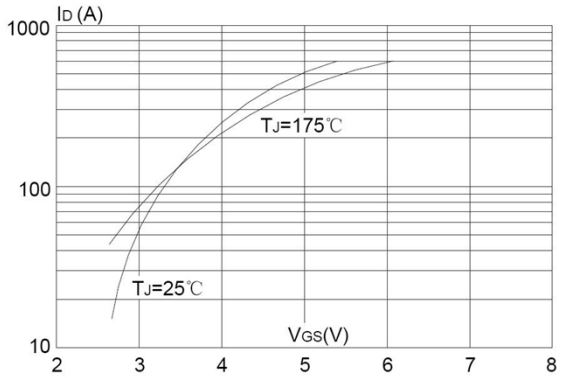


Figure 3: On-resistance vs. Drain Current

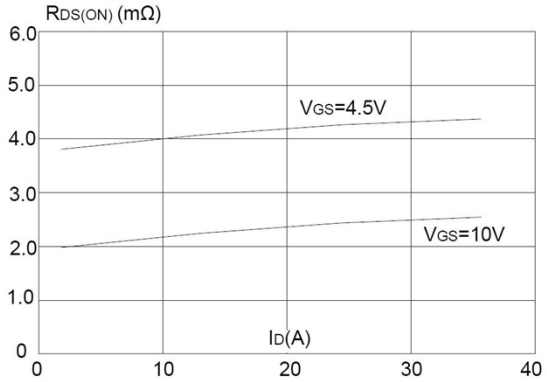


Figure 4: Body Diode Characteristics

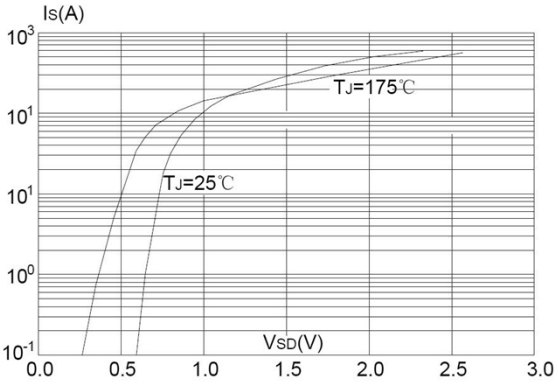


Figure 5: Gate Charge Characteristics

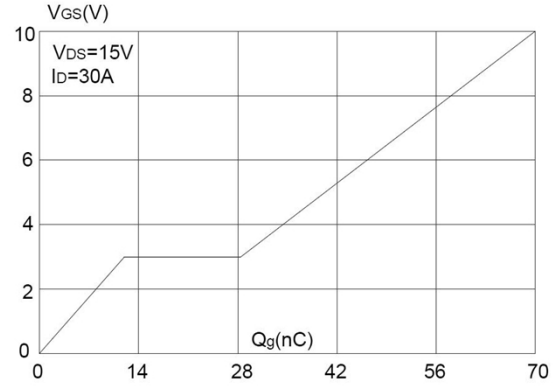


Figure 6: Capacitance Characteristics

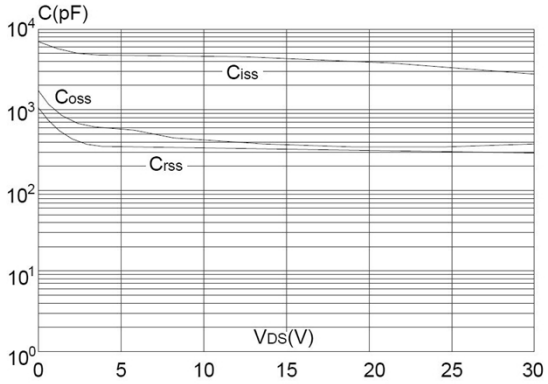


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

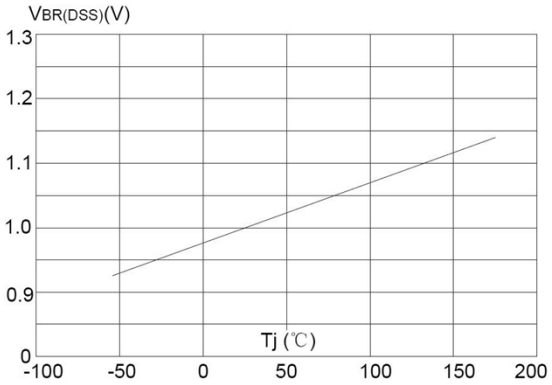


Figure 8: Normalized on Resistance vs. Junction Temperature

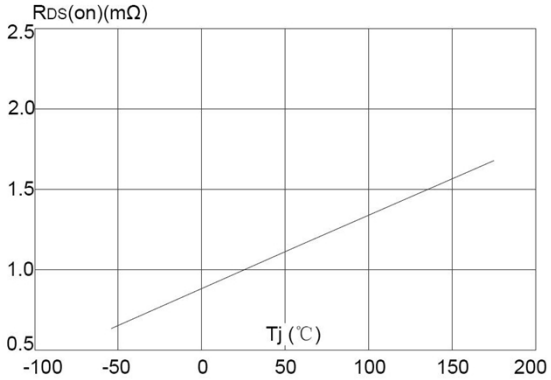


Figure 9: Maximum Safe Operating Area

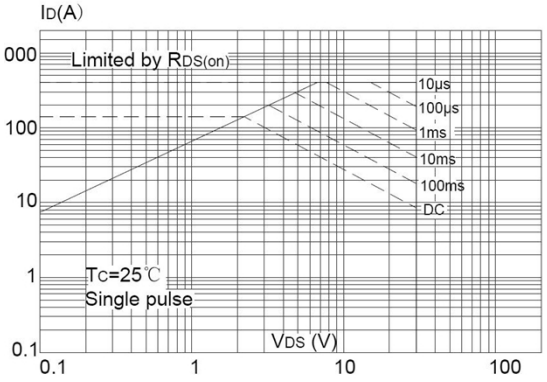
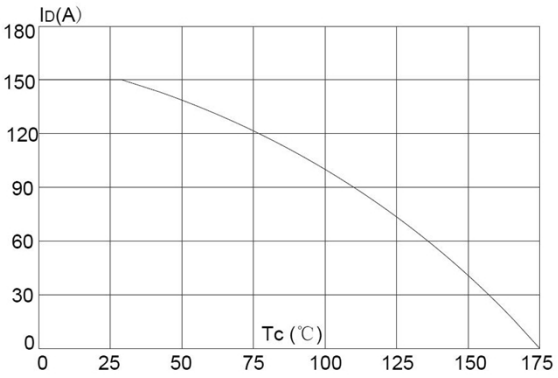
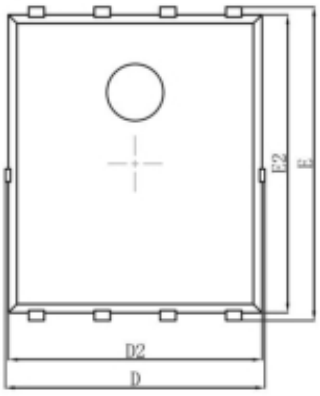


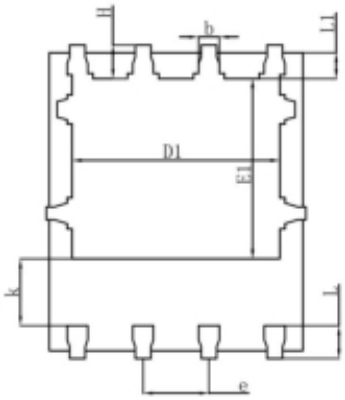
Figure 10: Maximum Continuous Drain Current vs. Case Temperature



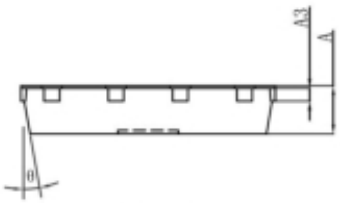
PDFN5X6-8L Package Information



Top View
[顶视图]



Bottom View
[背视图]



Side View
[侧视图]

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.000	0.035	0.039
A3	0.254REF.		0.010REF.	
D	4.944	5.096	0.195	0.201
E	5.974	6.126	0.235	0.241
D1	3.910	4.110	0.154	0.162
E1	3.375	3.575	0.133	0.141
D2	4.824	4.976	0.190	0.196
E2	5.674	5.826	0.223	0.229
k	1.190	1.390	0.047	0.055
b	0.350	0.450	0.014	0.018
e	1.270TYP.		0.050TYP.	
L	0.559	0.711	0.022	0.028
L1	0.424	0.576	0.017	0.023
H	0.574	0.726	0.023	0.029
θ	10°	12°	10°	12°