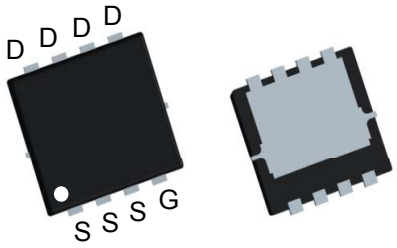
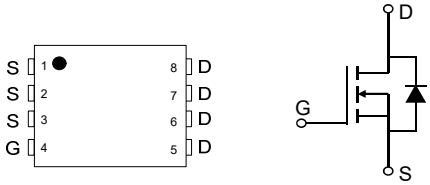
LOW VOLTAGE MOSFET (N-CHANNEL)

FEATURES

- V_{DS}=30V,$R_{DS(ON)}$≤5.2mΩ@V_{GS}=10 V,I_D=20A
- Ultra Low on-resistance
- For Low power DC to DC converter application
- For Load switch application
- Surface Mount device





PDFN3333

MECHANICAL DATA

- Case: PDFN3333
- Case Material: Molded Plastic. UL flammability
- Classification Rating: 94V-0
- Weight: 0.012 grams (approximate)
- Marking:Q80N03

MAXIMUM RATINGS (T_A = 25°C unless otherwise noted)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-Source Voltage	±20	V
I_D@T_C=25°C	Continuous Drain Current[1]	80	A
I_D@T_C=100°C	Continuous Drain Current[1]	45	A
I_{DM}	Pulsed Drain Current[2]	280	A
EAS	Single Pulse Avalanche Energy[3]	56	mJ
I_{AS}	Avalanche Current	40	A
P_D@T_C=25°C	Total Power Dissipation[4]	37	W
T_{STG}	Storage Temperature Range	-55 to 150	°C
T_J	Operating Junction Temperature Range	-55 to 150	°C

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise specified)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V , I_D=250uA	30	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance[2]	V_{GS}=10 V , I_D=20A		4.3	5.2	mΩ
		V_{GS}=4.5V , I_D=20A		5.5	6.6	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250uA	1.0	1.3	2.5	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=30V , V_{GS}=0V , T_J=25°C	---	---	1	uA
		V_{DS}=24V , V_{GS}=0V , T_J=125°C	---	---	10	
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±20V , V_{DS}=0V	---	---	±100	nA
Rg	Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	---	0.85	----	Ω
Q_g	Total Gate Charge (10V)	V_{DS}=15V , V_{GS}=10V , I_D=20A	---	38	---	nC
Q_{gs}	Gate-Source Charge		---	5.0	---	
Q_{gd}	Gate-Drain Charge		---	12	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DD}=15V , V_{GS}=10V , R_G=3Ω, I_D=20A	---	8.5	---	ns
T_r	Rise Time		---	9	---	
$T_{d(off)}$	Turn-Off Delay Time		---	30	---	
T_f	Fall Time		---	10	---	
C_{iss}	Input Capacitance	V_{DS}=15V , V_{GS}=0V , f=1MHz	---	1920	---	pF
C_{oss}	Output Capacitance		---	300	---	
C_{rss}	Reverse Transfer Capacitance		---	260	---	

LOW VOLTAGE MOSFET (N-CHANNEL)

Typical Characteristics

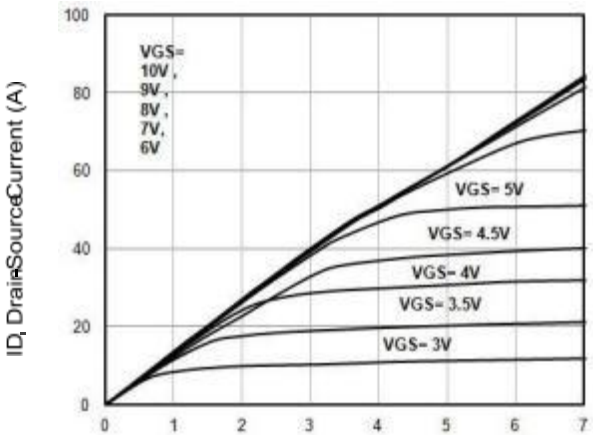


Fig1. Typical Output Characteristics

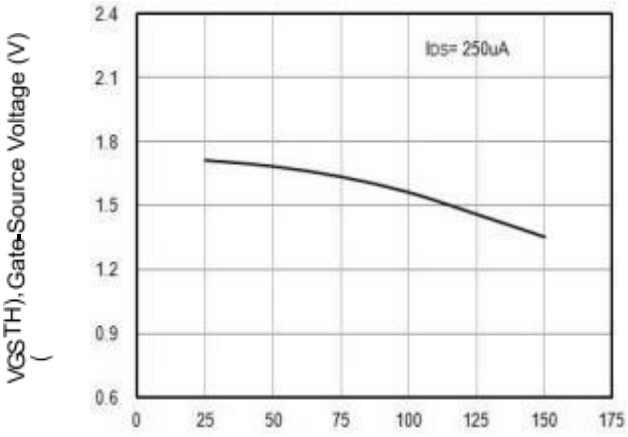


Fig2. $V_{GS(TH)}$ Gate -Source Voltage Vs.Tj

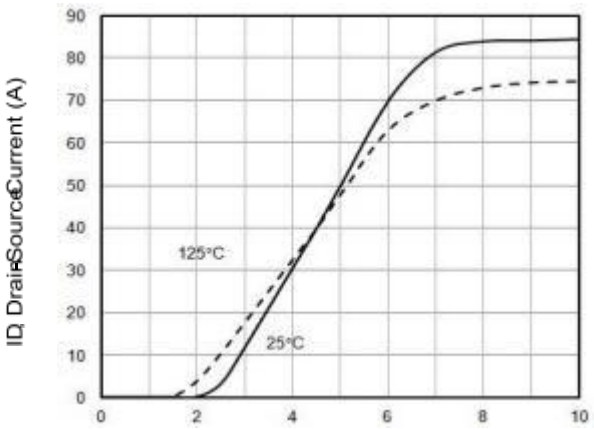


Fig3. Typical Transfer Characteristics

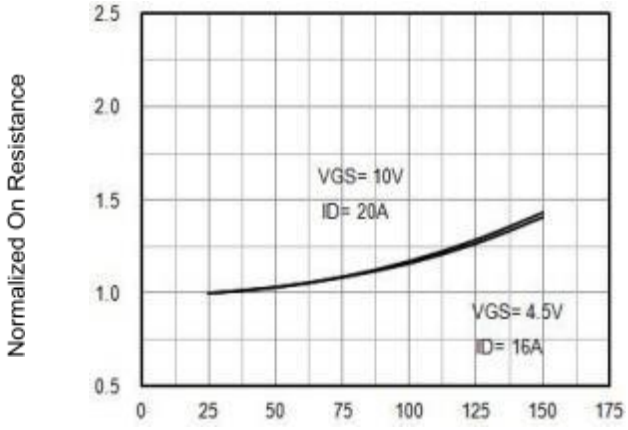


Fig4. Normalized On-Resistance Vs. Tj

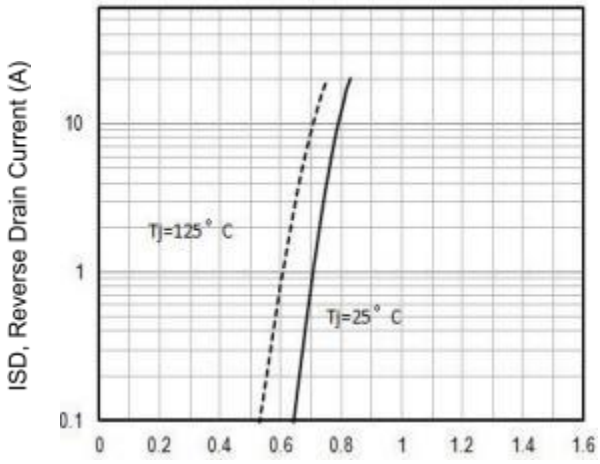


Fig6. Maximum Safe Operating Area Voltage

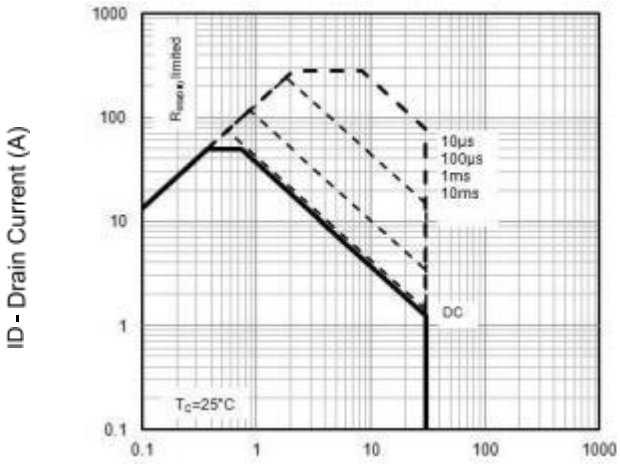
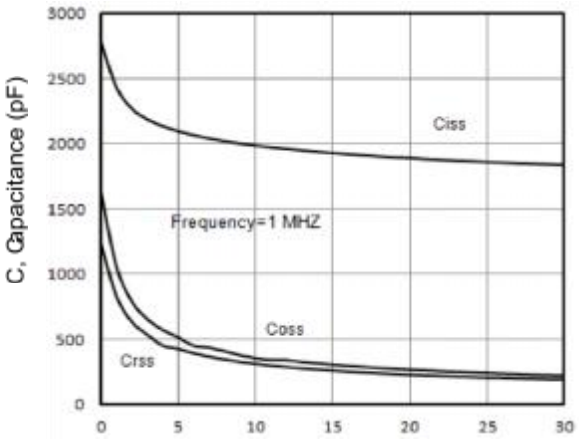


Fig5. Typical Source-Drain Diode Forward

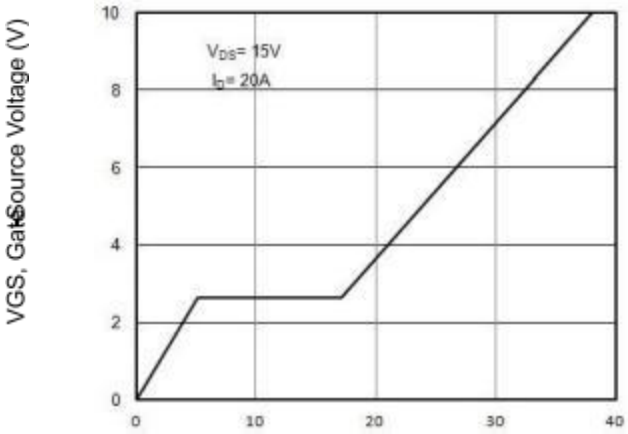
LOW VOLTAGE MOSFET (N-CHANNEL)

Typical Characteristics



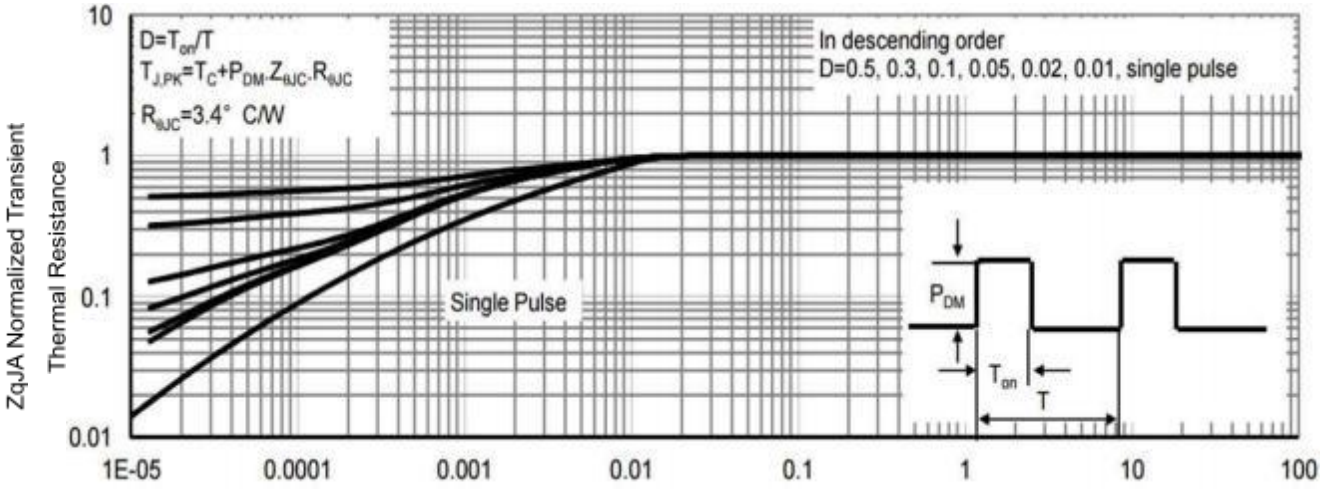
VDS , Drain-Source Voltage (V)

Fig7. Typical Capacitance Vs.Drain-Source Voltage



Qg -Total Gate Charge (nC)

Fig8. Typical Gate Charge Vs.Gate-Source Voltage



Pulse Width (s)

Fig9. Normalized Maximum Transient Thermal Impedance

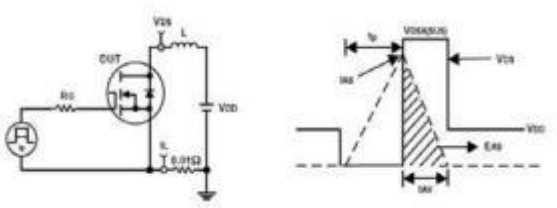


Fig10. Unclamped Inductive Test Circuit and waveforms

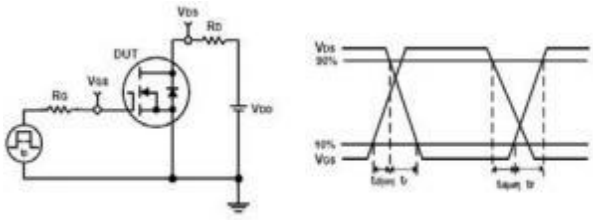
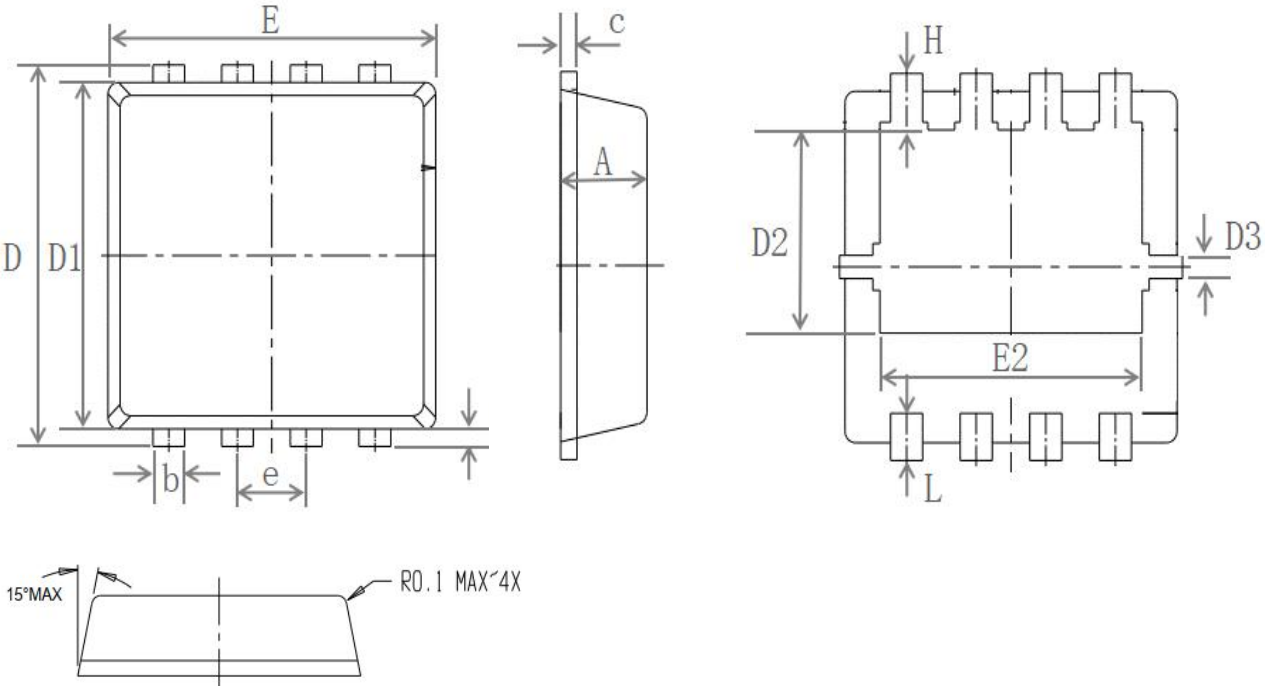


Fig11. Switching Time Test Circuit and waveforms

LOW VOLTAGE MOSFET (N-CHANNEL)

PDFN3333



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.750	0.850	0.295	0.335
b	0.250	0.350	0.098	0.138
c	0.100	0.250	0.039	0.098
D	3.200	3.400	1.260	1.339
D1	2.900	3.100	1.142	1.220
D2	1.635	1.880	0.644	0.740
D3	0.100	0.300	0.039	0.118
E	3.000	3.200	1.181	1.260
E2	2.400	2.600	0.945	1.024
e	0.658REF		0.259REF	
H	0.380	0.580	0.150	0.228
L	0.300	0.500	0.118	0.197
L1	0.100	0.200	0.039	0.079