

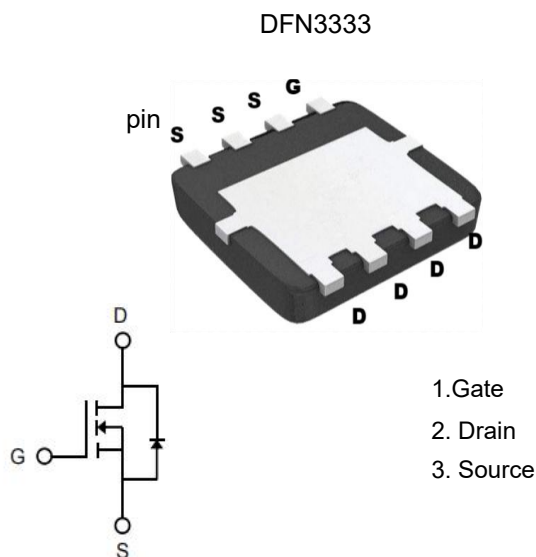


1.Features

- High Power and current handing capability
- Lead free product is acquired
- Surface Mount Package

2.Mechanical Data

- Case:Molded Plastic,PDFN3333;
- Epoxy:UL 94V-0 rate flame retardant
- Terminals:Plated Leads Solderable per MIL-STD-750,Method-2026.
- Marking: marked on body.
- Mounting Position : Any.



3.Absolute Maximum Ratings

Electrical Characteristics ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous ¹⁾	I_D	40	A
Pulsed Drain Current ²⁾	I_{DM}	80	A
Power Dissipation ³⁾	P_D	3.1	W
Single Pulsed Avalanche energy ⁴⁾	E_{AS}	129.59	mJ
Junction Temperature	T_J	$-55\sim+150$	$^{\circ}\text{C}$
Storage Temperature	T_{STG}	$-55\sim+150$	$^{\circ}\text{C}$
Junction-to-Ambient Thermal Resistance ⁵⁾	$R_{\theta JA}$	38	$^{\circ}\text{C/W}$



4. Electrical Characteristics

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	

Off Characteristics

Drain-source breakdown voltage	B_{VDSS}	$V_{GS} = 0V, I_D = 250\mu A$	30	-		V
Gate-source leakage current	I_{DSS}	$V_{DS} = 30V, V_{GS} = 0V$	-	-	1	μA
Gate threshold voltage	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 20V$	-	-	0.1	nA

On Characteristics³⁾

Drain-to-Source Leakage Current	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1	1.5	2.0	V
Drain-to-Source On-Resistance	$R_{DS(ON)}$	$V_{GS} = 10V, I_D = 10A$	-	4.5	5.0	m Ω
		$V_{GS} = 4.5V, I_D = 10A$	-	5.5	7.0	m Ω

Dynamic Parameters⁴⁾

Input Capacitance	C_{iss}	$V_{DS} = 15V, V_{GS} = 0V$ $f = 1.0MHz$	-	1965	-	pF
Output Capacitance	C_{oss}		-	202	-	
Reverse Transfer Capacitance	C_{rss}		-	157	-	

Switching Parameters⁴⁾

Turn-on Delay Time	$t_{d(on)}$	$V_{DD} = 15V, V_{GEN} = 4.5V$ $R_{GEN} = 4.5\Omega, R_L = 6\Omega$	-	12	-	ns
Turn-on Rise Time	t_r		-	29	-	
Turn-off Delay Time	$t_{d(off)}$		-	39	-	
Turn-off Fall Time	t_f		-	22	-	
Total Gate Charge	Q_g	$V_{DS} = 15V, I_D = 10A$ $V_{GS} = 10V$	-	37.1	-	nC
Gate-Source Charge	Q_{gs}		-	3.7	-	
Gate-Drain Charge	Q_{gd}		-	6.1	-	

Drain-Source Diode Characteristics

Forward Voltage ³⁾	V_{SD}	$V_{GS} = 0V, I_S = 0.2A$	-	0.8	1.2	V
Reverse Recovery Time	t_{rr}	$V_R = 30V, I_F = 15A$ $dI/dt = 200A/ms$	-	16.8	-	nS
Reverse Recovery Charge	Q_{rr}		-	12	-	nC

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, $t \leq 10$ sec.
3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.
4. Guaranteed by design, not subject to production



5. Rating And Characteristic Curves

Fig. 1 Output characteristics

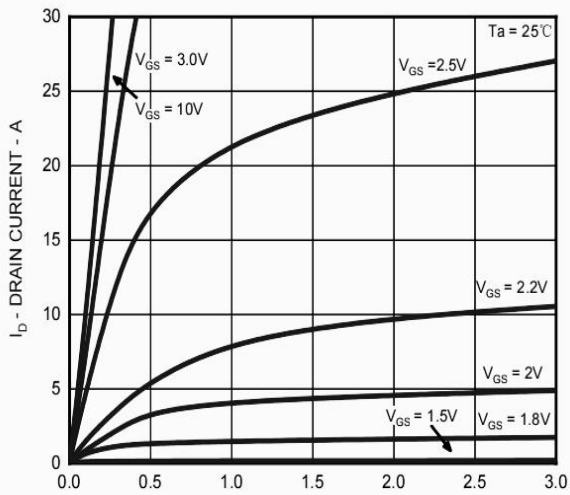


Fig 2 On-Resistance vs. Drain Current (I)

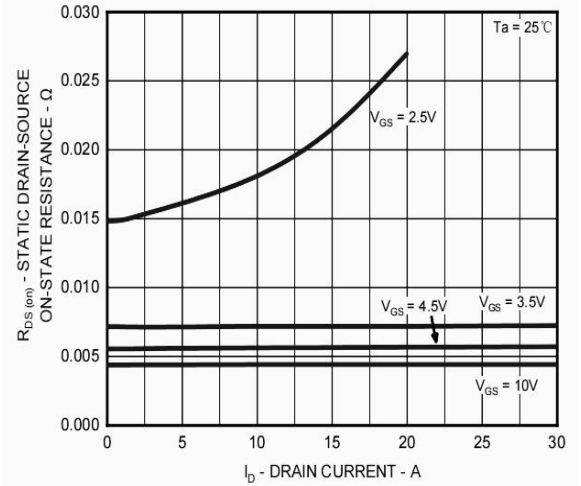


Fig.3 On-Resistance vs. Drain Current (II)

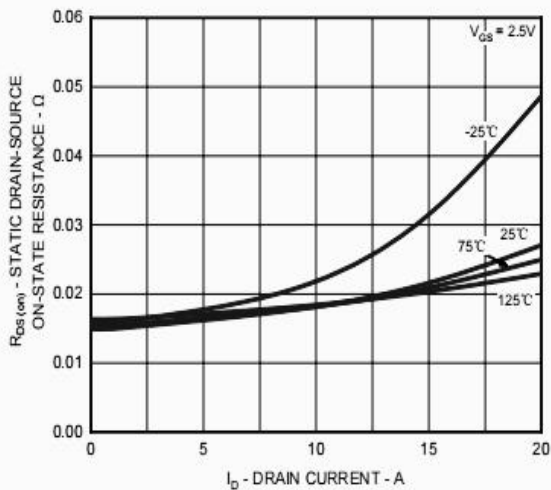


Fig.4 Diode Forward Voltage vs. Current

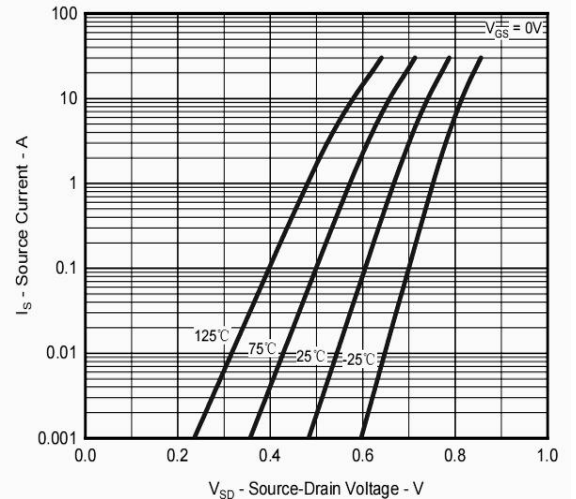


Fig.5 On-Resistance vs. Gate-Source Voltage

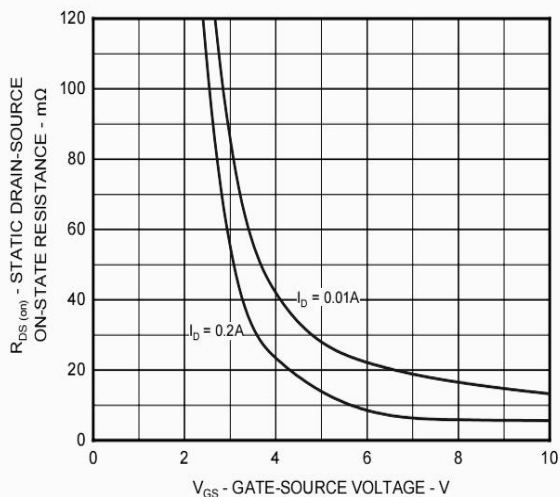
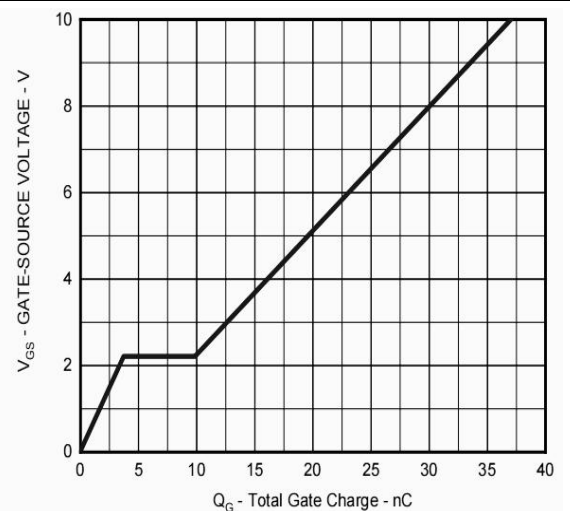


Fig.6 Gate Charge Characteristics





6. Rating And Characteristic Curves

Fig 7 Typical Junction Capacitance

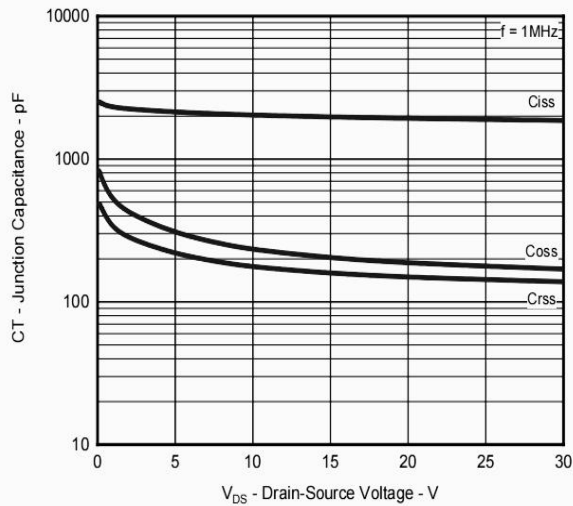


Fig.8 Single Pulse Maximum Power Dissipation

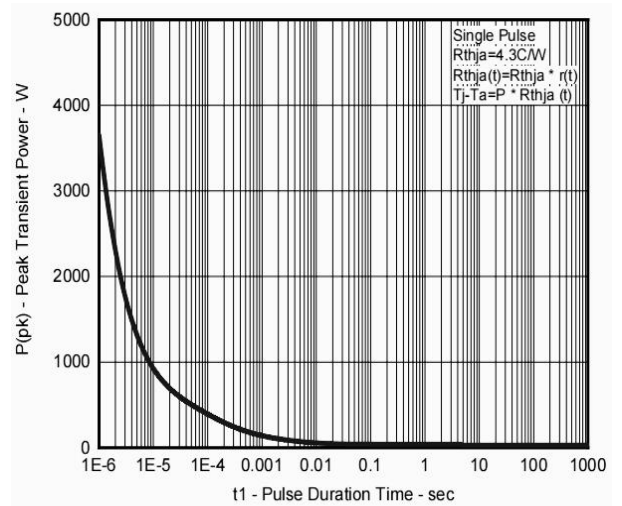
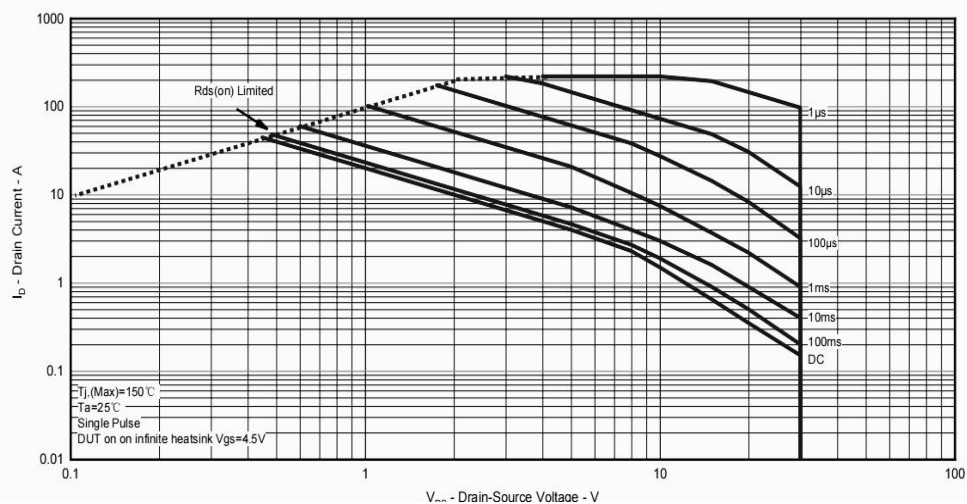
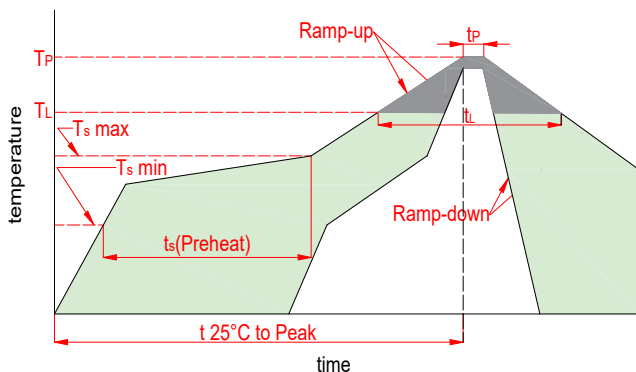


Fig.9 Safe Operation Area



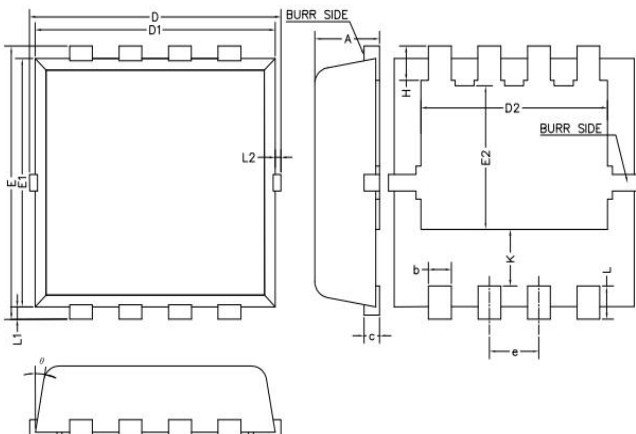


7. Soldering Parameters



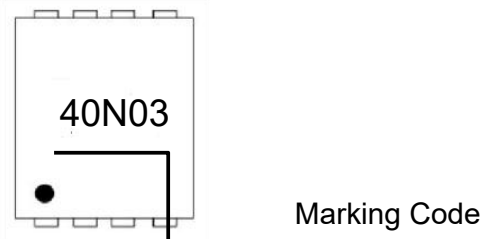
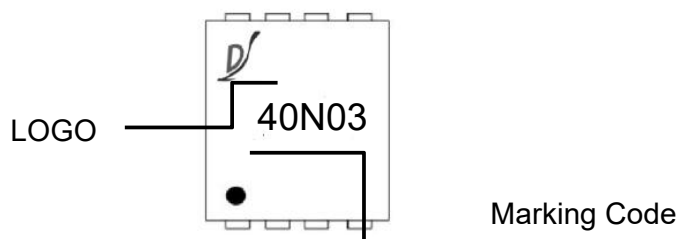
Reflow Condition		Lead-free
Pre Heat	Temp. min(T_s (min))	150°C
	Temp. max(T_s (min))	200°C
	Time(min to max)(t_s)	60~180s
Aver. ramp up rate(Liquidus Temp.)(T_L)to peak		3°C/s max
T_s (max) to T_L -Ramp-up Rate		3°C/s max
Reflow	Temp.(T_L)(Liquidus)	217°C
	Temp.(t_L)(Liquidus)	60~150s
Peak Temp.(T_P)		260 ^{+0/-5} °C
Time within actual peak Temp.(t_p)		30s max
Ramp-down Rate		6°C/s max
Time 25°C to peak Tempe.(T_P)		8 minutes max
Do not exceed		260°C

8.Package Drawing



Dimensions	Inches		Millimeters	
	Min	Max	Min	Max
A	0.028	0.035	0.7	0.9
b	0.010	0.014	0.25	0.35
c	0.006	0.008	0.14	0.2
D	0.122	0.134	3.1	3.4
D1	0.120	0.128	3.05	3.25
D2	0.093	0.100	2.35	2.55
e	0.022	0.030	0.55	0.75
E	0.122	0.134	3.1	3.4
E1	0.114	0.122	2.9	3.1
E2	0.065	0.072	1.64	1.84
H	0.013	0.020	0.32	0.52
K	0.023	0.031	0.59	0.79
L	0.010	0.022	0.25	0.55
L1	0.004	0.008	0.1	0.2
L2	-	0.006	-	0.15
θ	8°	12°	8°	12°

9. Part Marking System



10. Package Information

Part Number	Package	Marking	Quantity(pcs)
XNM40N03D33	PDFN3333	40N03	5000



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