

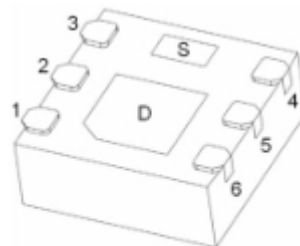
Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
40V	12mΩ@10V	10A
	16mΩ@4.5V	

Feature

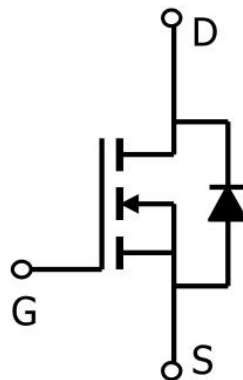
- High power and current handing capability
- Lead free product is acquired
- Surface mount package

Package

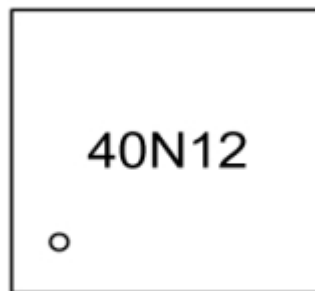


DFNWB2*2-6L-J

Circuit diagram



Marking



40N12 =Device Code

Absolute maximum ratings

(T_a=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V _{DS}	40	V
Gate-Source Voltage	V _{GS}	±20	V
Drain Current-Continuous	I _D	10	A
Pulsed Drain Current	I _{DM}	40	A
Maximum Power Dissipation	P _D	2.4	W
Thermal Resistance,Junction-to-Ambient	R _{θJA}	52	°C/ W
Operating Junction and Storage Temperature Range	T _J , T _{STG}	-55 to 150	°C

Electrical characteristics

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

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV (BR)DSS	V _{GS} = 0V, I _D =250μA	40			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =40V,V _{GS} = 0V			1	uA
Gate-Body Leakage Current	I _{GSS}	V _{GS} = ±20V , V _{DS} =0V			±100	uA
On Characteristics						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1	1.5	2.5	V
Drain-Source On-State Resistance	R _{DS(on)}	V _{GS} =10V, I _D =8A		12	15	mΩ
		V _{GS} =4.5V, I _D =4A		16	22	
Forward Transconductance	g _{FS}	V _{DS} =5V,I _D =8A	33			S
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} =20V, V _{GS} =0V, f=1MHz		964		pF
Output Capacitance	C _{Oss}			109		
Reverse Transfer Capacitance	C _{rss}			96		
Switching Characteristics						
Turn-On Delay Time	T _{d(on)}	V _{DD} =20V, R _L =2.5Ω, V _{GS} =10V, R _{GEN} =3Ω		5.5		nS
Rise Time	T _r			14		
Turn-Off Delay Time	T _{d(off)}			24		
Fall Time	T _f			12		
Total Gate Charge	Q _g	V _{DS} =20V, I _D =8A, V _{GS} =10V		22.9		pF
Gate-Source Charge	Q _{gs}			3.5		
Gate-Drain Charge	Q _{gd}			5.3		
Diode Characteristics						
Diode Forward Voltage	V _{SD}	V _{GS} =0V,I _S =1A		0.8	1.2	A

Typical Characteristics

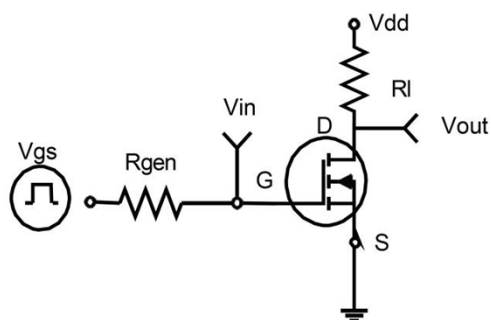


Figure 1: Switching Test Circuit

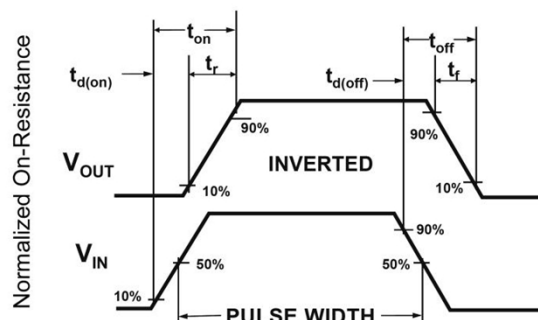


Figure 2: Switching Waveforms

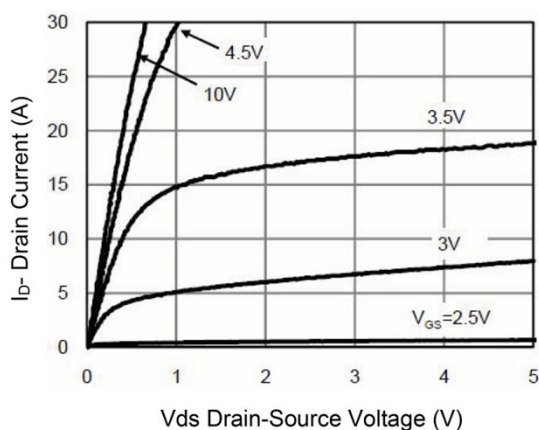


Figure 3: Output Characteristics

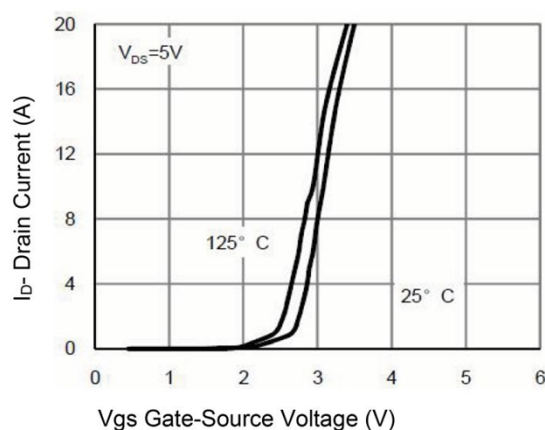


Figure 4: Transfer Characteristics

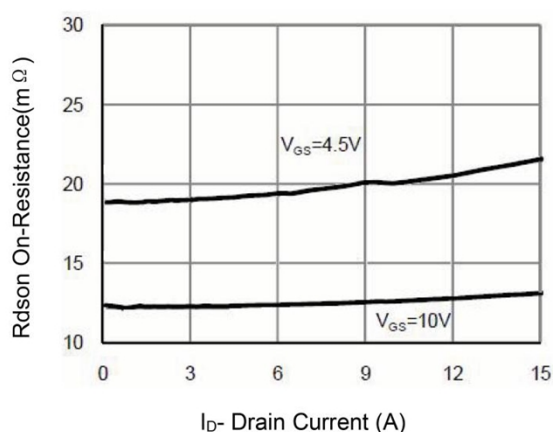


Figure 5: Drain-Source On-Resistance

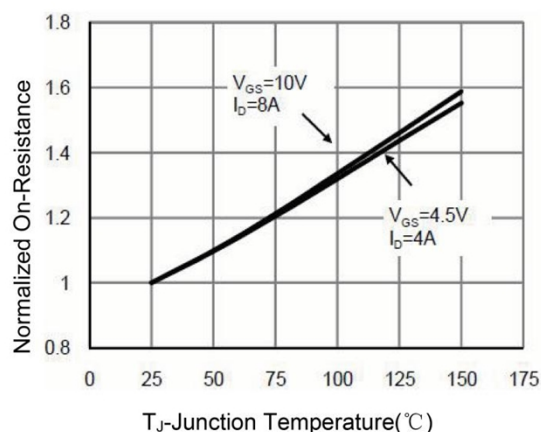
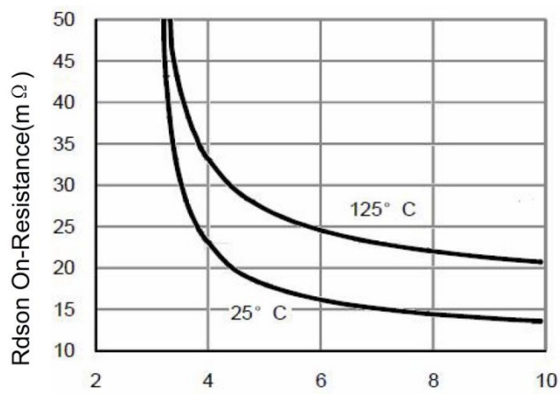
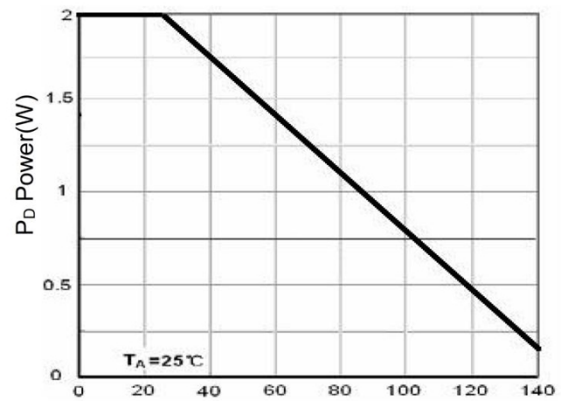


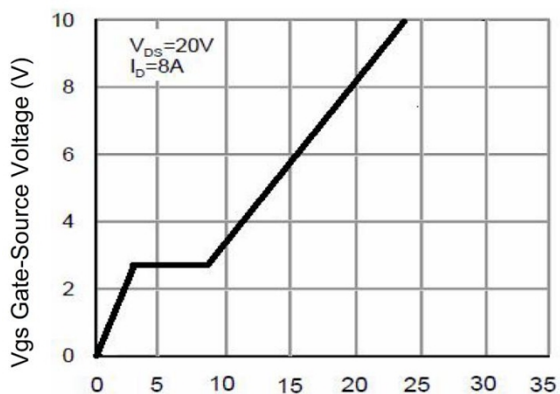
Figure 6: Drain-Source On-Resistance



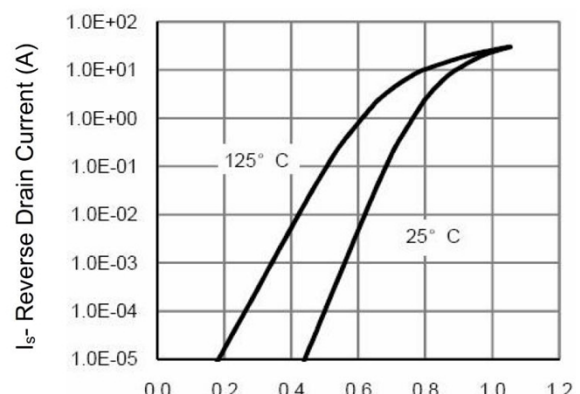
Vgs Gate-Source Voltage (V)
Figure 7 Rdson vs Vgs



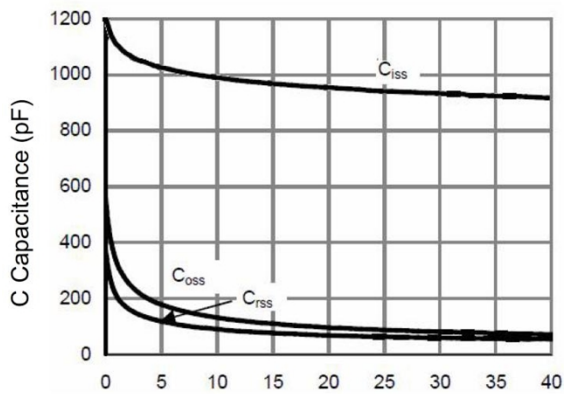
Tj Junction Temperature (°C)
Figure 8 Power Dissipation



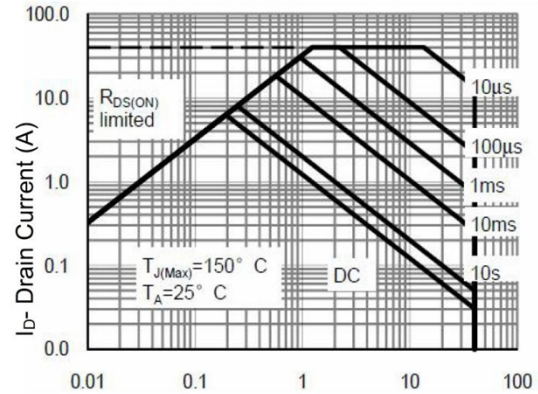
Qg Gate Charge (nC)
Figure 9 Gate Charge



Vds Drain-Source Voltage (V)
Figure 10 Source-Drain Diode Forward



Vds Drain-Source Voltage (V)
Figure 11 Capacitance vs Vds



Vds Drain-Source Voltage (V)
Figure 12 Safe Operation Area

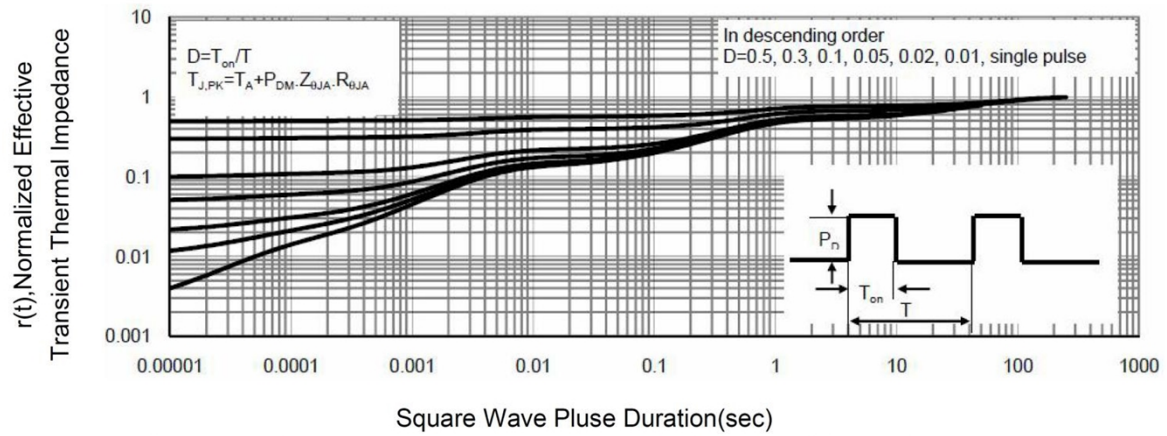
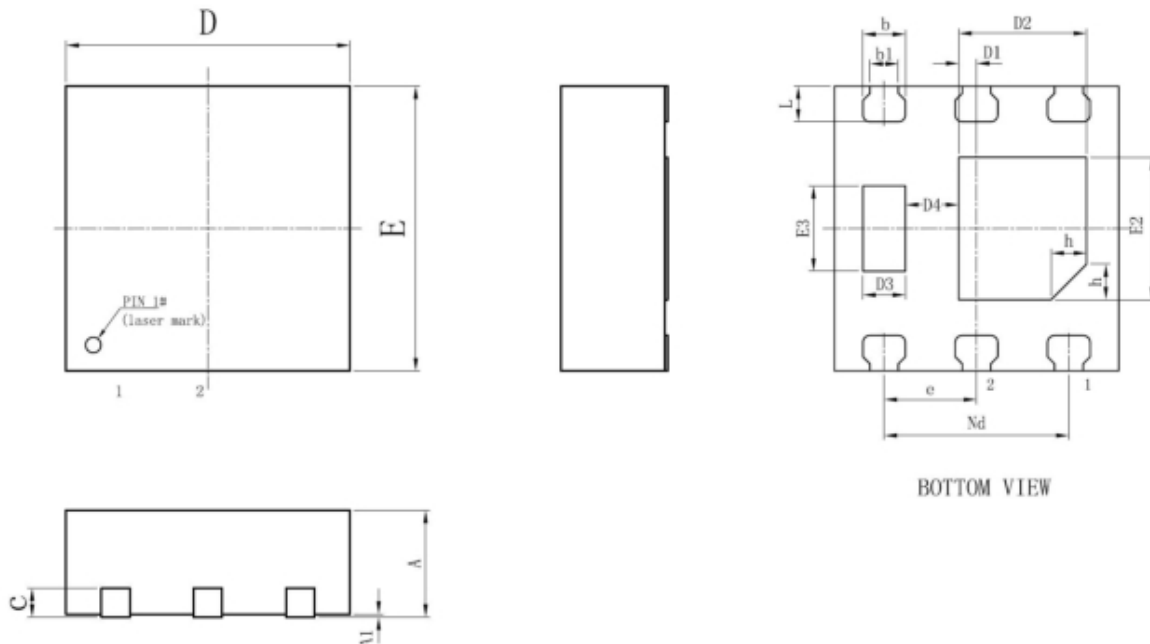


Figure 13 Normalized Maximum Transient Thermal Impedance

DFN2*2-6L-J Package Information



Symbol	Dimensions In Millimeters		
	Min.	Typ.	Max.
A	0.70	0.75	0.80
A1		0.02	0.05
b	0.25	0.30	0.35
b1	0.20REF		
c	0.203REF		
D	1.90	2.00	2.10
D1	0.08	0.125	0.18
D2	0.85	0.90	0.95
D3	0.25	0.30	0.35
D4	0.33	0.375	0.43
e	0.65BSC		
Nd	1.30BSC		
E	1.90	2.00	2.10
E2	0.95	1.00	1.05
E3	0.55	0.60	0.65
L	0.20	0.25	0.30
h	0.25REF		