Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
40V	4.5mΩ@10V	75A
	6.5mΩ@4.5V	

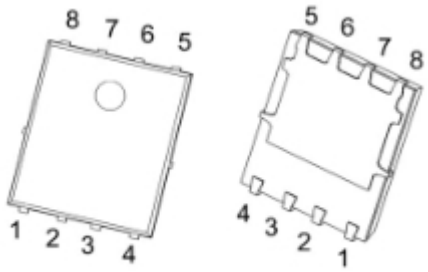
Feature

- Low On-Resistance
- Low Input Capacitance

Application

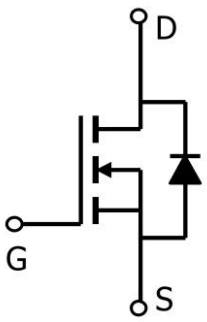
- Power Management Functions
- DC-DC Converters

Package

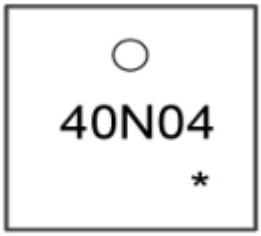


PDFNWB5X6-8L

Circuit diagram



Marking



40N04 =Device Code
*** =Month Code**

Absolute maximum ratings

(T_a=25℃ 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	75	A
Pulsed Drain Current	I_{DM}	300	A
Maximum Power Dissipation	P_D	85	W
Single Pulse Avalanche Energy(L=0.1mH)	E_{AS}	80	mJ
Thermal Resistance,Junction-to-Case [1]	$R_{\theta JC}$	1.47	℃/W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 to 150	℃

Electrical characteristics

(T_A=25℃, unless otherwise noted)

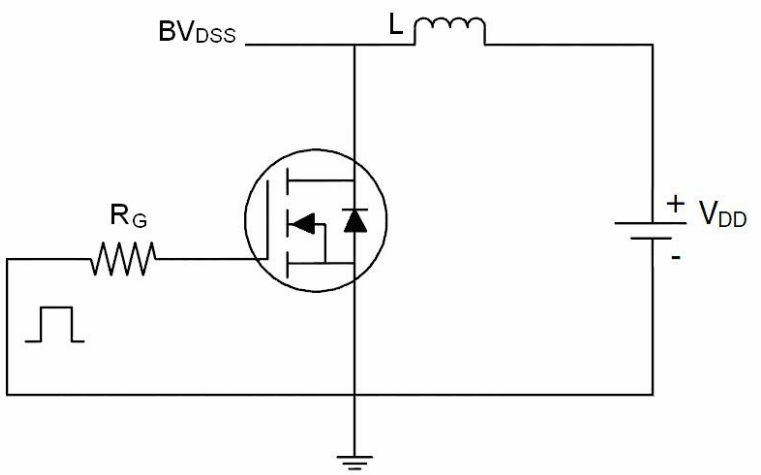
Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$BV_{(BR)DSS}$	V_{GS} = 0V, I_D =250μA	40	45		V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} =40V,V_{GS} = 0V			1	uA
Gate-Body Leakage Current	I_{GSS}	V_{GS} =±20V , V_{DS}=0V			±100	uA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	1.2	1.6	2.5	V
Drain-Source On-State Resistance[3]	$R_{DS(on)}$	V_{GS} =10V, I_D =10A		4.5	6	mΩ
		V_{GS} =4.5V, I_D =6A		6.5	10	
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS}=20V, V_{GS}=0V, f=1MHz			5000	pF
Output Capacitance	C_{oss}				900	
Reverse Transfer Capacitance	C_{rss}				500	
Total Gate Charge	Q_g	V_{DS}=20V, I_D =20A, V_{GS}=10V		61		pF
Gate-Source Charge	Q_{gs}			15.3		
Gate-Drain Charge	Q_{gd}			14.5		
Switching Characteristics						
Turn-On Delay Time	$T_{d(on)}$	V_{DD}=20V, R_L=1Ω, V_{GS}=10V, R_G =3Ω		12		nS
Rise Time	T_r			11		
Turn-Off Delay Time	$T_{d(off)}$			39		
Fall Time	T_f			12		
Diode Characteristics						
Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_S=1A			1.0	V

Note：

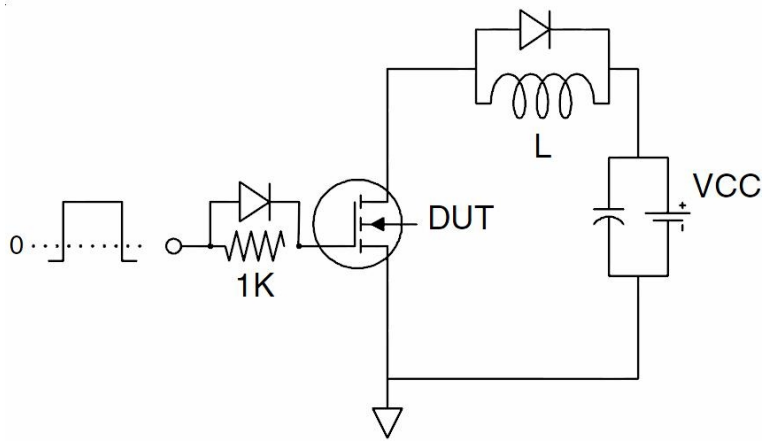
1. Surface Mounted on FR4 Board, t ≤ 10 sec.

Test Circuits

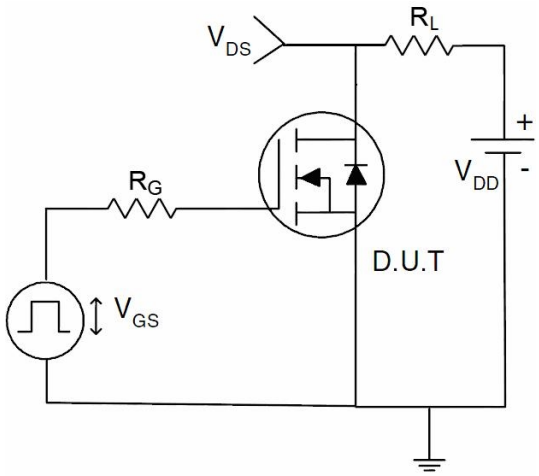
- EAS Test Circuits



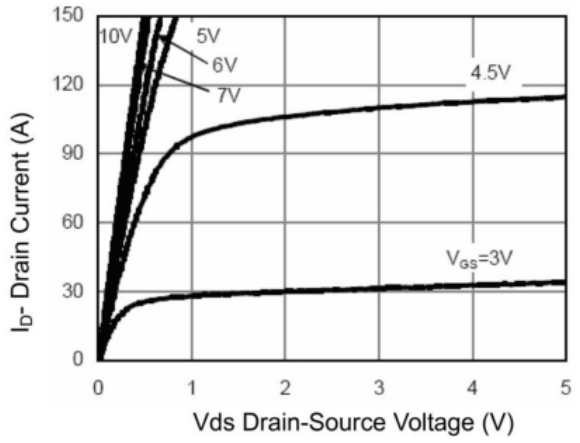
- Gate Charge Test Circuit



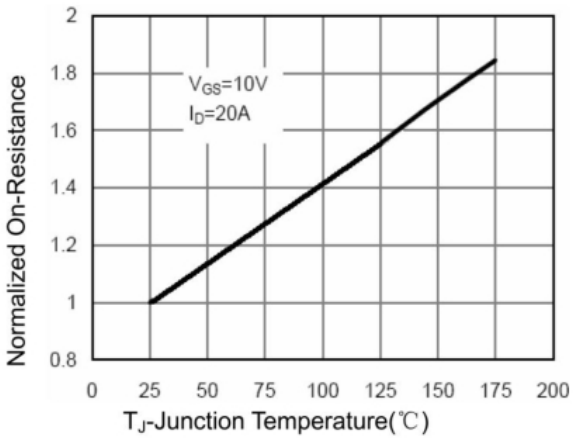
- Switch Time Test Circuit



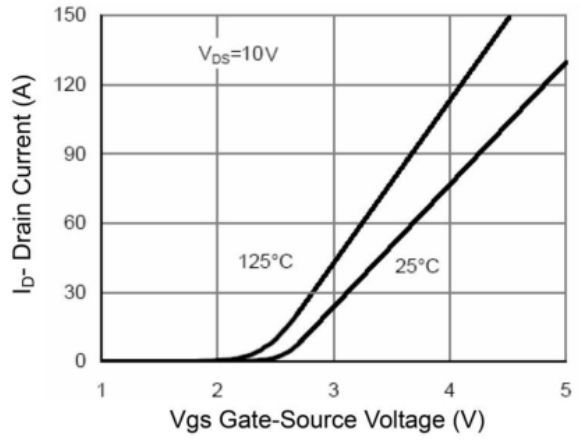
Typical Characteristics



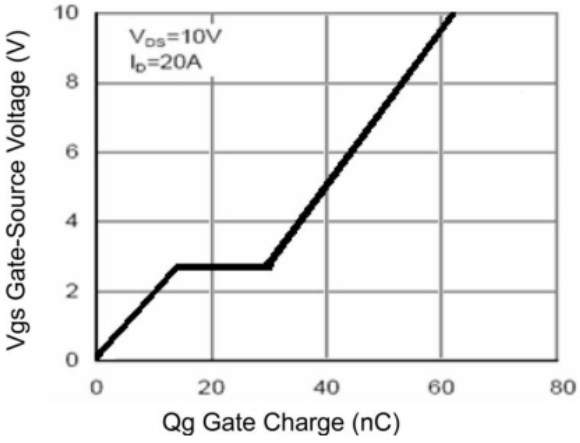
Output Characteristics



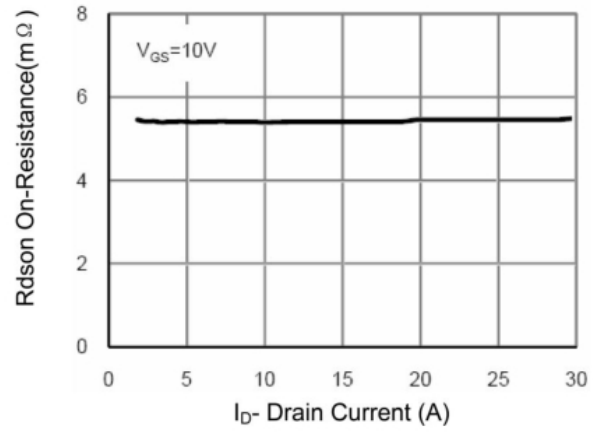
Rdson-JunctionTemperature



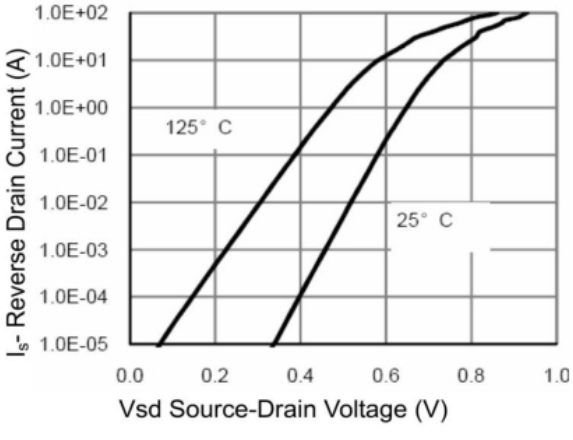
Transfer Characteristics



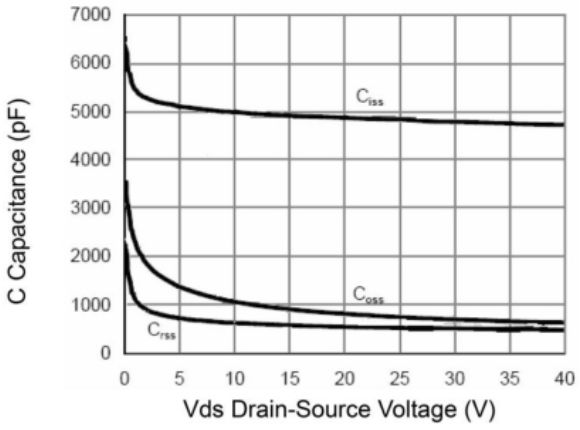
Gate Charge



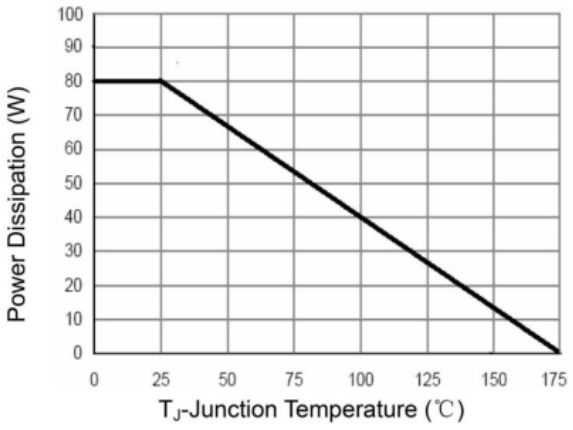
Rdson- Drain Current



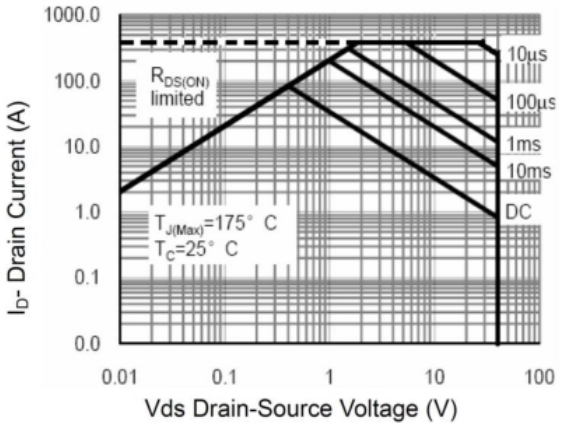
Source- Drain Diode Forward



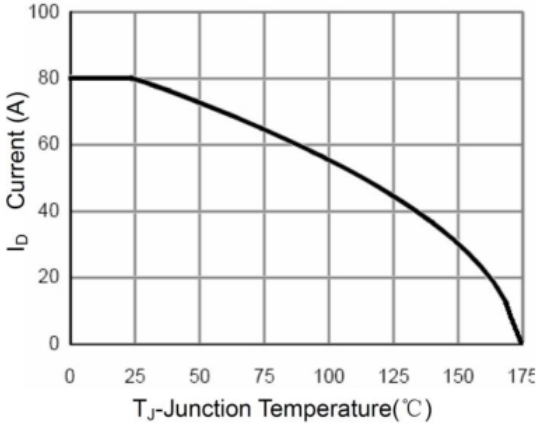
Capacitance vs Vds



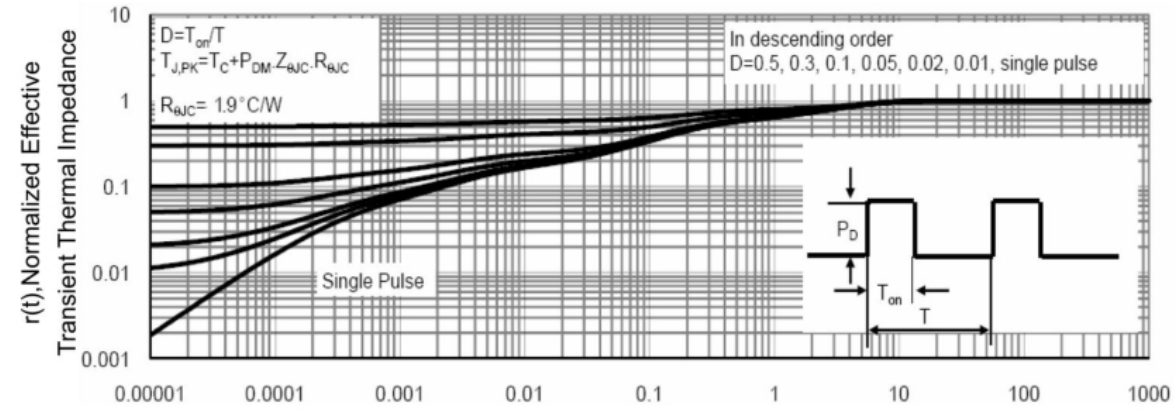
Power De-rating



Safe Operation Area

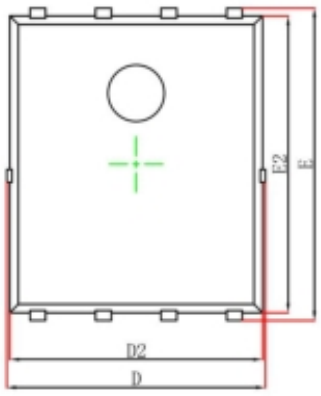


ID Current- Junction Temperature

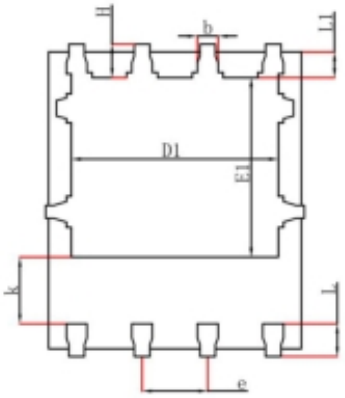


Normalized Maximum Transient Thermal Impedance

PDFNWB5X6-8L 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°