N-Channel Enhancement-Mode MOSFET

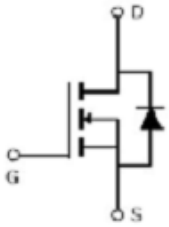
General Description

Thigh Density Cell Design For Ultra Low On-Resistance Fully Characterized Avalanche Voltage and Current Improved Shoot-Through FOM

- Simple Drive Requirement
- Small Package Outline
- Surface Mount Device

Pin configurations

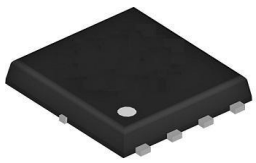
See Diagram below



Features

For a single MOSFET

- V_{DS} = 100V
- $R_{DS(ON)}$ = 6.3mΩ @ V_{GS}=10V



Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
WLQ80N10	DFN5X6-8L	WLQ80N10 XXX YYYY	5000

Absolute Maximum Ratings				
Parameter		**Symbol**	**Rating**	**Units**
Drain-Source Voltage		V_{DS}	100	V
Gate-Source Voltage		V_{GS}	±20	V
Drain Current	Continuous	I_D	80	A
	Pulsed		320	
Avalanche Energy L=0.1mH		E_{AS}	210	mJ
Total Power Dissipation	@TA=25℃	P_D	160	W
Operating Junction Temperature Range		T_J	-55 to 175	℃

Electrical Characteristics (TJ=25℃ unless otherwise noted)						
Symbol	**Parameter**	**Test Conditions**	**Min**	**Typ**	**Max**	**Units**
OFF CHARACTERISTICS (Note 2)						
BV_{DSS}	Drain-Source Breakdown Voltage	I_D=250μA, V_{GS}=0 V	100			V
I_{DSS}	Drain to Source Leakage Current	V_{DS}=100V, V_{GS}=0V			1	μA
I_{GSS}	Gate-Body Leakage Current	V_{GS}=20V			100	nA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}= V_{GS}, I_D=250μA	1.0	2.0	3.0	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=10V, I_D=39A	-	6.3	7.5	mΩ
g_{FS}	Forward Transconductance	V_{DS}=50V, I_D=39A	40			S
DYNAMIC PARAMETERS						
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=50V, f=1MHz		3500		pF
C_{oss}	Output Capacitance			600		pF
C_{rss}	Reverse Transfer Capacitance			29		pF
SWITCHING PARAMETERS						
Q_g	Total Gate Charge [2]	V_{GS}=10V, V_{DS}=50V, I_D=39A		48		nC
Q_{gs}	Gate Source Charge			15		nC
Q_{gd}	Gate Drain Charge			8		nC
$t_{d(on)}$	Turn-On Delay Time	V_{GS}=10V, V_{DS}=50V, R_{GEN}=4.7Ω I_D=35A		12		ns
$t_{d(off)}$	Turn-Off Delay Time			31		ns
$t_{d(r)}$	Turn-On Rise Time			45		ns
$t_{d(f)}$	Turn-Off Fall Time			10		ns

Thermal Resistance				
Symbol	**Parameter**	**Typ**	**Max**	**Units**
$R_{\theta JC}$	Thermal Resistance Junction to Case(t≤10s)	-	1.2	℃/W

Typical Characteristics

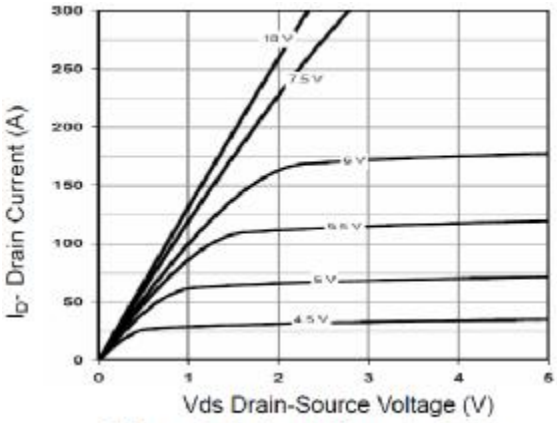


Figure 1 Output Characteristics

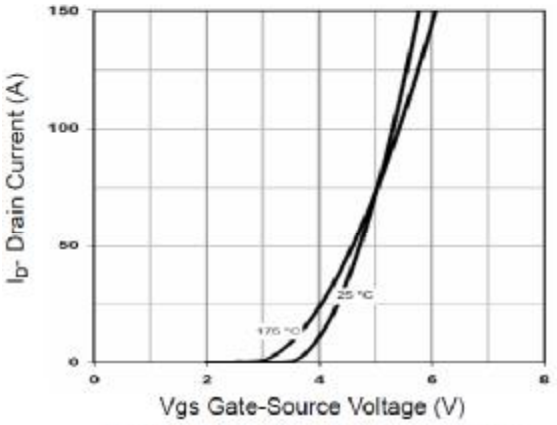


Figure 2 Transfer Characteristics

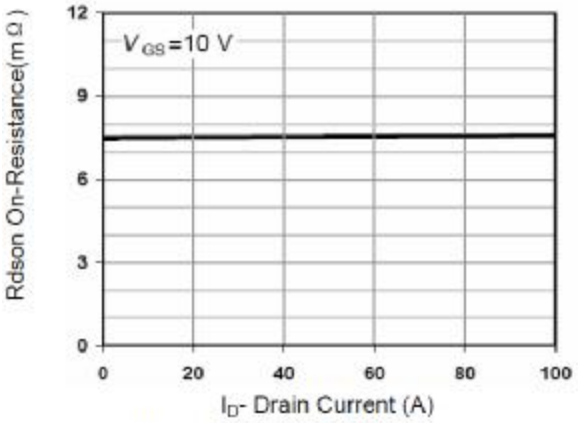


Figure 3 Rdson- Drain Current

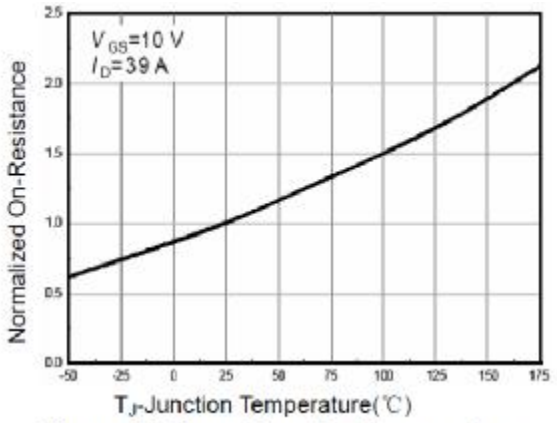


Figure 4 Rdson-JunctionTemperature

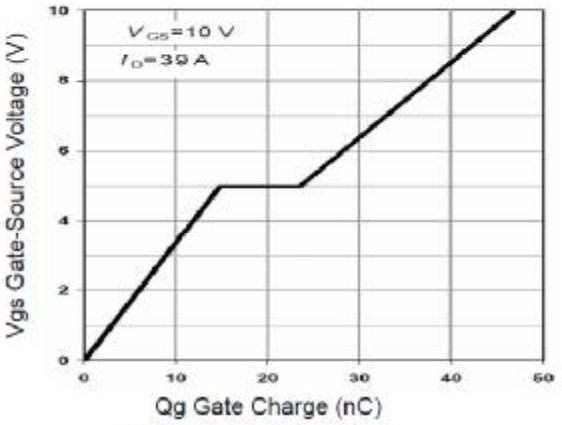


Figure 5 Gate Charge

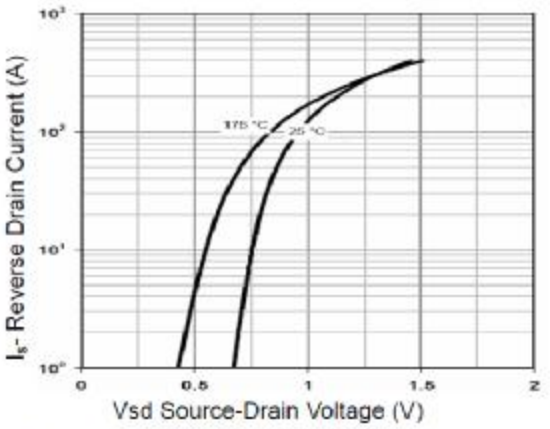


Figure 6 Source- Drain Diode Forward

Typical Characteristics

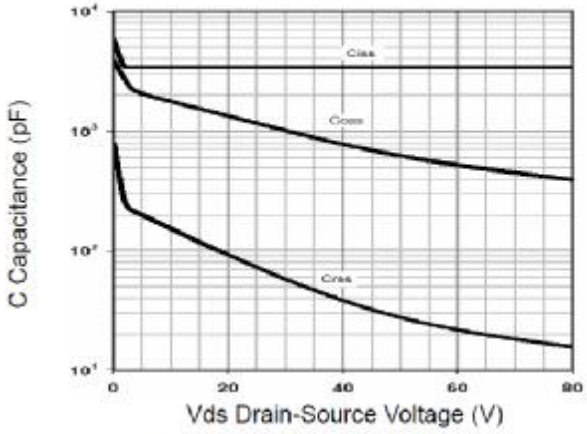


Figure 7 Capacitance vs Vds

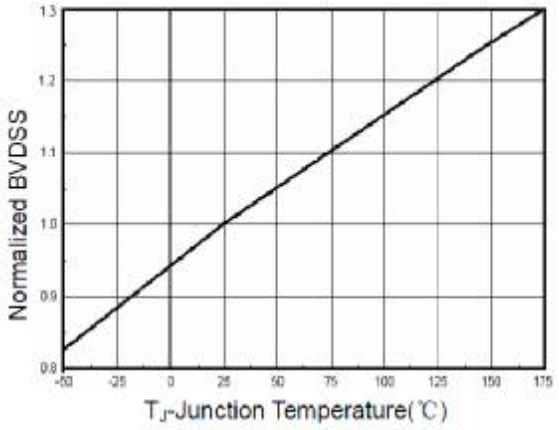


Figure 9 BV_{DSS} vs Junction Temperature

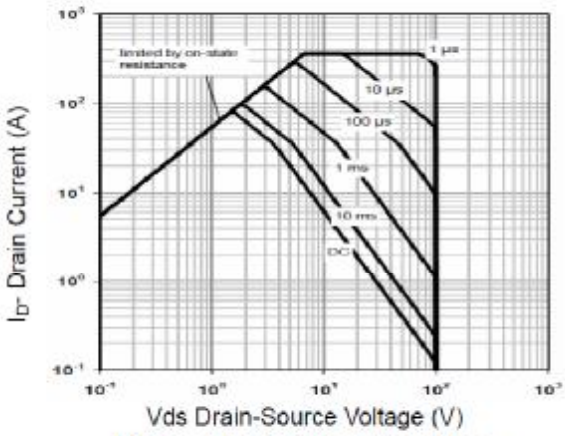


Figure 8 Safe Operation Area

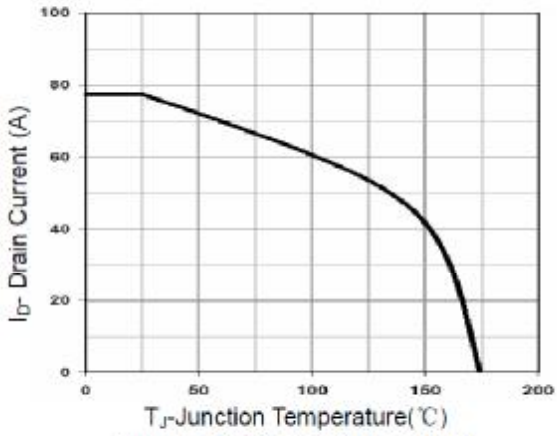


Figure 10 Current De-rating

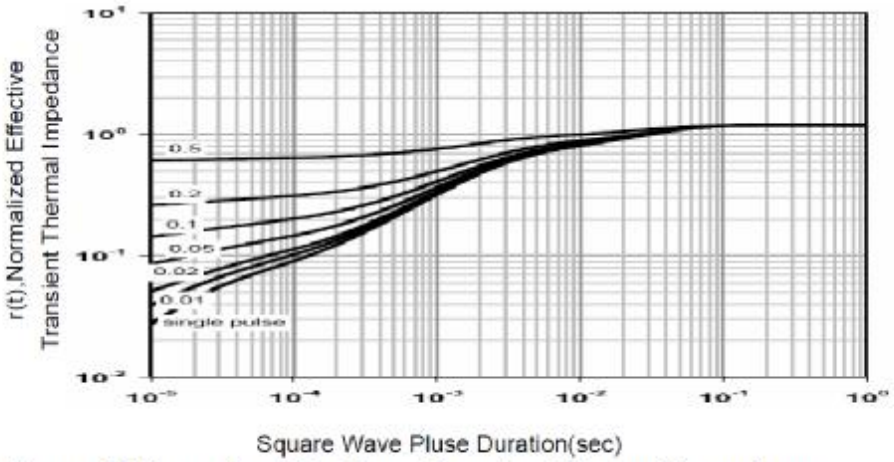
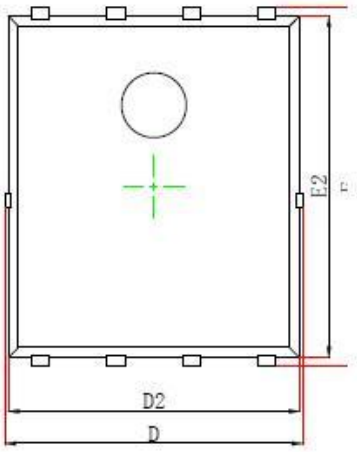


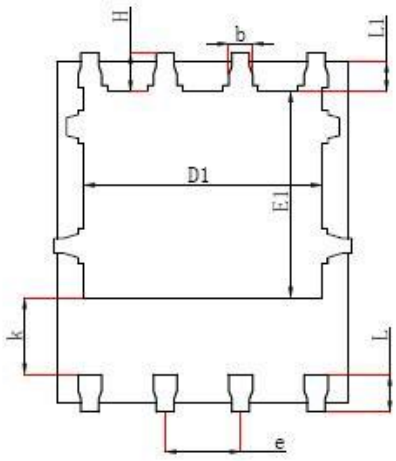
Figure 11 Normalized Maximum Transient Thermal Impedance

Package Outline Dimension

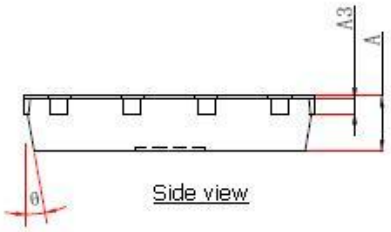
DFN5 × 6



Top view



Bottom view



Side view

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°