

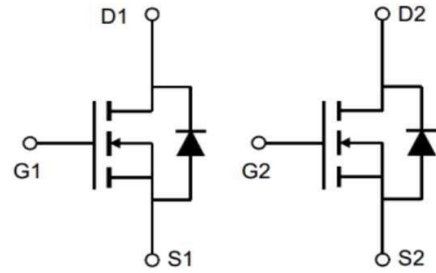


- ★ 100% EAS Guaranteed
- ★ Green Device Available
- ★ Super Low Gate Charge
- ★ Excellent CdV/dt effect decline
- ★ Advanced high cell density Trench technology

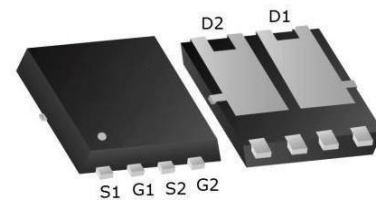
### Description

The WLQ302 is the high cell density trenched N-ch MOSFETs, which provide excellent RDSON and gate charge for most of the synchronous buck converter applications.

The WLQ302 meet the RoHS and Green Product requirement 100% EAS guaranteed with full function reliability approved.



### PDFN3333-8L Pin Configuration



### Product Summary

BVDSS	RDSON	ID
30V	10mΩ	30A

### Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
$V_{DS}$	Drain-Source Voltage	30	V
$V_{GS}$	Gate-Source Voltage	±20	V
$I_D@T_A=25^\circ C$	Continuous Drain Current, $V_{GS}$ @ 10V <sup>1</sup>	30	A
$I_D@T_A=70^\circ C$	Continuous Drain Current, $V_{GS}$ @ 10V <sup>1</sup>	18	A
$I_{DM}$	Pulsed Drain Current <sup>2</sup>	50	A
EAS	Single Pulse Avalanche Energy <sup>3</sup>	24.2	mJ
$I_{AS}$	Avalanche Current	22	A
$P_D@T_A=25^\circ C$	Total Power Dissipation <sup>4</sup>	1.5	W
$T_{STG}$	Storage Temperature Range	-55 to 150	°C
$T_J$	Operating Junction Temperature Range	-55 to 150	°C

### Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-Ambient <sup>1</sup>	---	85	°C/W



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

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	30	-	-	V
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS}=30V, V_{GS}=0V,$	-	-	1.0	$\mu A$
$I_{GSS}$	Gate to Body Leakage Current	$V_{DS}=0V, V_{GS}=\pm 20V$	-	-	$\pm 100$	nA
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	1.0	1.5	2.5	V
$R_{DS(on)}$	Static Drain-Source on-Resistance <small>note3</small>	$V_{GS}=10V, I_D=10A$	-	10	14	m $\Omega$
		$V_{GS}=4.5V, I_D=5A$	-	18	25	
$C_{iss}$	Input Capacitance	$V_{DS}=15V, V_{GS}=0V,$ $f=1.0MHz$	-	614	-	pF
$C_{oss}$	Output Capacitance		-	118	-	pF
$C_{rss}$	Reverse Transfer Capacitance		-	98	-	pF
$Q_g$	Total Gate Charge	$V_{DS}=15V, I_D=11A,$ $V_{GS}=10V$	-	16	-	nC
$Q_{gs}$	Gate-Source Charge		-	2.7	-	nC
$Q_{gd}$	Gate-Drain("Miller") Charge		-	4.5	-	nC
$t_{d(on)}$	Turn-on Delay Time	$V_{DS}=15V, R_L=1.35\Omega,$ $R_{GEN}=3\Omega, V_{GS}=10V$	-	6	-	ns
$t_r$	Turn-on Rise Time		-	10	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	30	-	ns
$t_f$	Turn-off Fall Time		-	6.5	-	ns
$I_S$	Maximum Continuous Drain to Source Diode Forward Current		-	-	30	A
$I_{SM}$	Maximum Pulsed Drain to Source Diode Forward Current		-	-	60	A
$V_{SD}$	Drain to Source Diode Forward Voltage	$V_{GS}=0V, I_S=15A$	-	-	1.2	V
$t_{rr}$	Body Diode Reverse Recovery Time	$I_F=11A, di/dt=500A/\mu s$ $T_J=25^\circ C$	-	7	-	ns
$Q_{rr}$	Body Diode Reverse Recovery Charge		-	10	-	nC

### Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$I_S$	Continuous Source Current <sup>1,5</sup>	$V_G=V_D=0V$ , Force Current	---	---	30	A
$V_{SD}$	Diode Forward Voltage <sup>2</sup>	$V_{GS}=0V, I_S=1A, T_J=25^\circ C$	---	---	1	V
$t_{rr}$	Reverse Recovery Time	$I_F=8A, di/dt=100A/\mu s,$ $T_J=25^\circ C$	---	8	---	nS
$Q_{rr}$	Reverse Recovery Charge		---	2.9	---	nC

Note :



### Typical Performance Characteristics

Figure 1: Output Characteristics

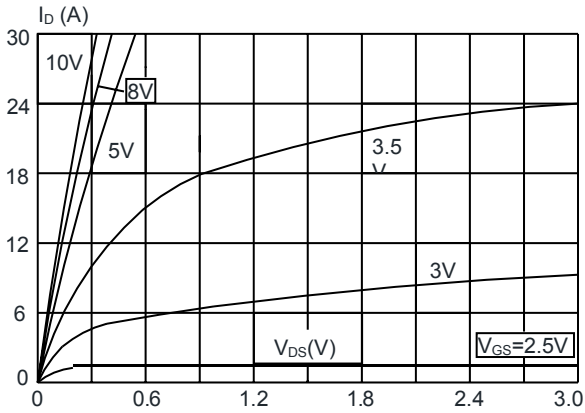


Figure 2: Typical Transfer Characteristics

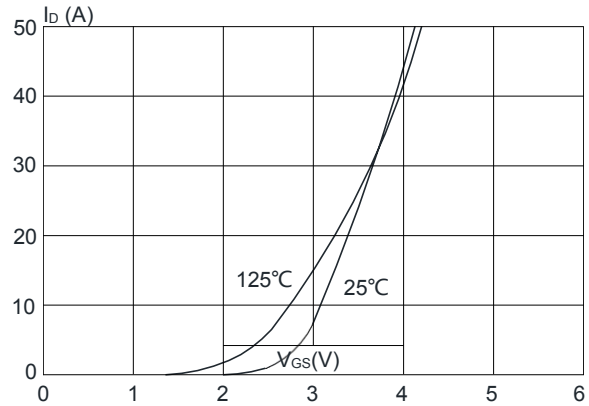


Figure 3: On-resistance vs. Drain Current

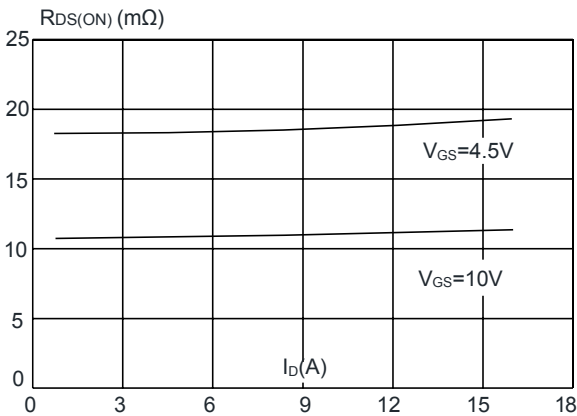


Figure 4: Body Diode Characteristics

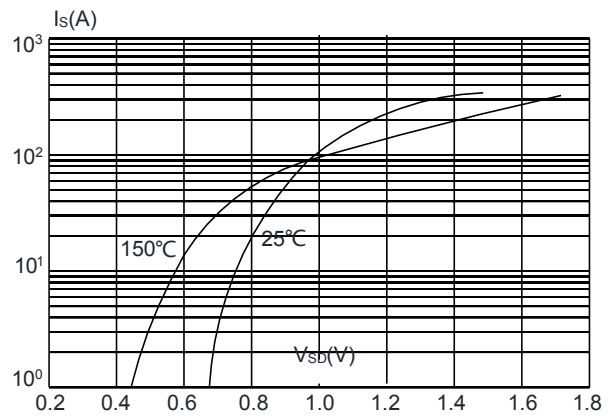


Figure 5: Gate Charge Characteristics

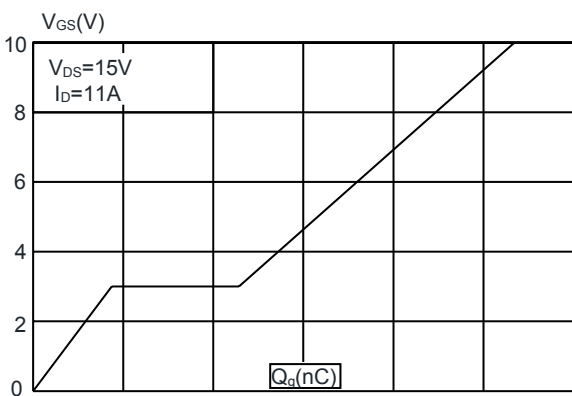
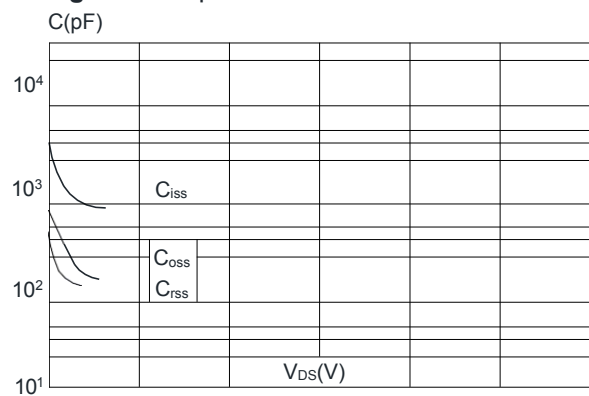
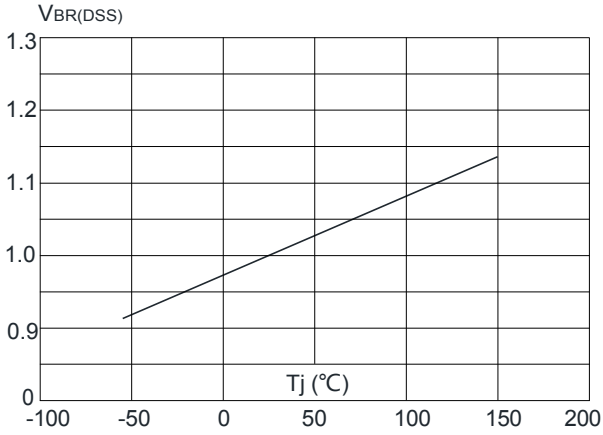


Figure 6: Capacitance Characteristics

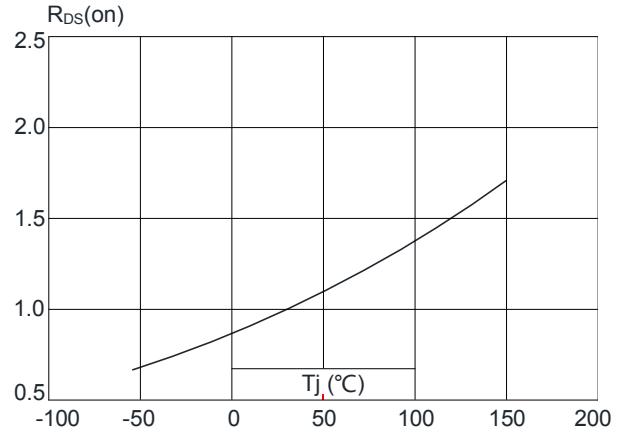




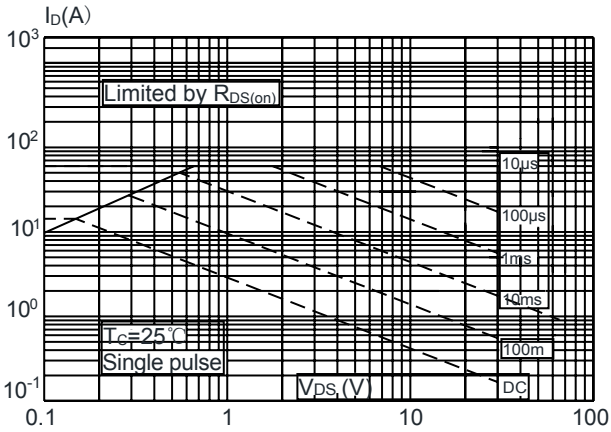
**Figure 7:** Normalized Breakdown Voltage vs. Junction Temperature



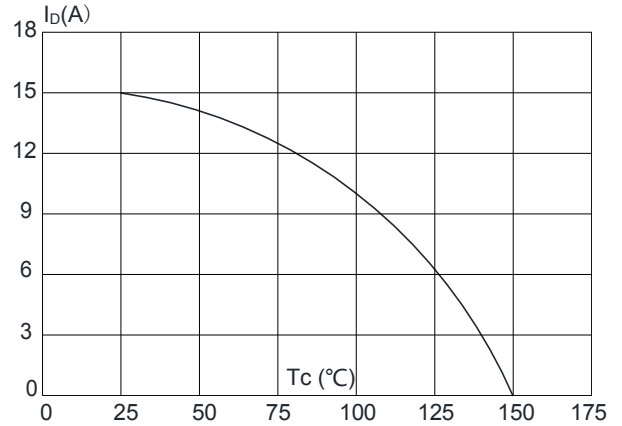
**Figure 8:** Normalized on Resistance vs. Junction Temperature



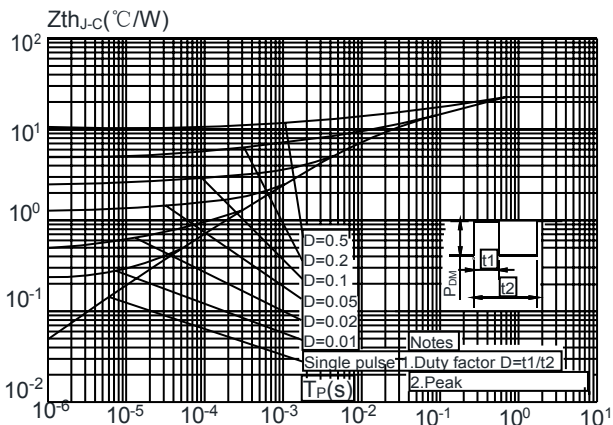
**Figure 9:** Maximum Safe Operating Area



**Figure 10:** Maximum Continuous Drain Current vs. Case Temperature

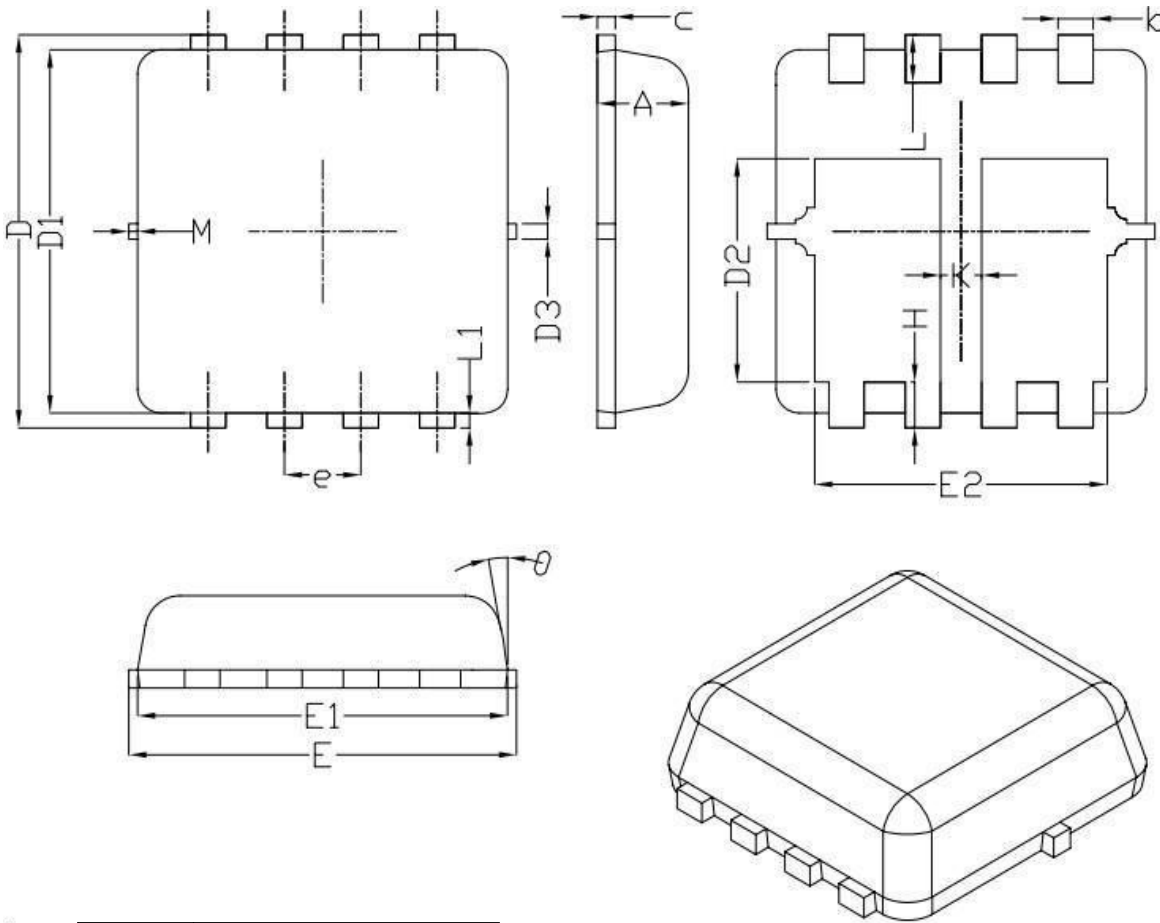


**Figure.11:** Maximum Effective Transient Thermal Impedance, Junction-to-Case





Dual PDFN3333-8L Package Outline Data



Symbol	Dimensions (unit: mm)		
	Min	Typ	Max
A	0.70	0.75	0.80
b	0.25	0.30	0.35
c	0.10	0.15	0.25
D	3.25	3.35	3.45
D1	3.00	3.10	3.20
D2	1.78	1.88	1.98
D3	--	0.13	--
E	3.20	3.30	3.40
E1	3.00	3.15	3.20
E2	2.39	2.49	2.59
e	0.65 BSC		
H	0.30	0.39	0.50
L	0.30	0.40	0.50
L1	--	0.13	--
K	0.30	--	--
θ	--	10°	12°
M	*	*	0.15
* Not Specified			

Notes:

1. Refer to JEDEC MO-240 variation CA.
2. Dimensions "D1" and "E1" do NOT include mold flash protrusions or gate burrs.
3. Dimensions "D1" and "E1" include interterminal flash or protrusion.



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