

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
40V	0.9mΩ@10V	370A

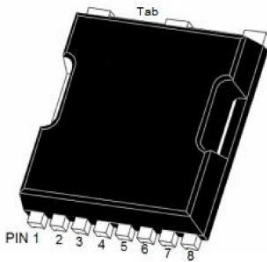
Feature

- Fast Switching
- Low Gate Charge and R_{ds(on)}
- Advanced Split Gate Trench Technology

Application

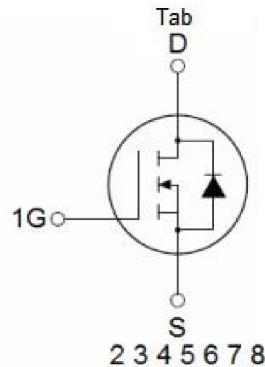
- PWM Application
- Hard switched and high frequency circuits
- Power Management

Package

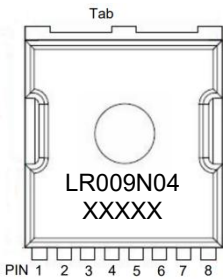


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Circuit diagram



Marking



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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	40	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ($T_C=25^\circ\text{C}$)	I_D	370	A
Continuous Drain Current ($T_C=100^\circ\text{C}$)	$I_D(100^\circ\text{C})$	247	A
Pulsed Drain Current	I_{DM}	1480	A
Power Dissipation ($T_C=25^\circ\text{C}$)	P_D	300	W
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	0.42	$^\circ\text{C}/\text{W}$
Single pulse avalanche Energy ¹⁾	E_{AS}	1522	mJ
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-55 ~ +150	$^\circ\text{C}$

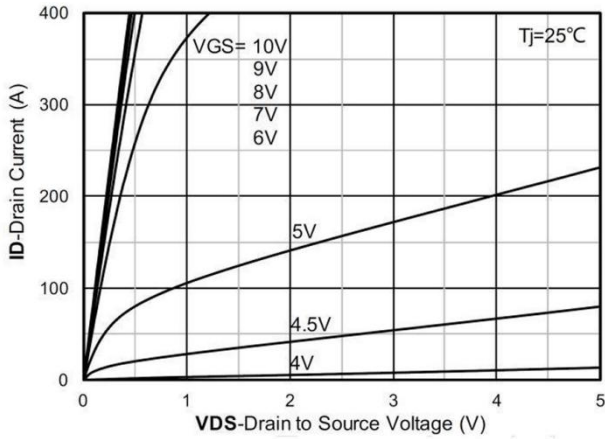
Electrical characteristics ($T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu\text{A}$	40			V
Zero gate voltage drain current	I_{DSS}	$V_{DS} = 32V, V_{GS} = 0V, T_J = 25^\circ\text{C}$			1	μA
Gate-body leakage current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$			± 100	nA
Gate threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu\text{A}$	2.0	2.9	4.0	V
Drain-source on-resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 50A$		0.75	0.90	m Ω
Dynamic characteristics²⁾						
Input Capacitance	C_{iss}	$V_{DS} = 25V, V_{GS} = 0V, f = 1\text{MHz}$		6020		pF
Output Capacitance	C_{oss}			2850		
Reverse Transfer Capacitance	C_{rss}			118		
Total Gate Charge	Q_g	$V_{DS} = 20V, V_{GS} = 10V, I_D = 50A$		135.6		nC
Gate-Source Charge	Q_{gs}			38		
Gate-Drain Charge	Q_{gd}			42		
Turn-on delay time	$t_{d(on)}$	$V_{DD} = 20V, V_{GS} = 10V, I_D = 50A, R_G = 6\Omega$		42		nS
Turn-on rise time	t_r			136		
Turn-off delay time	$t_{d(off)}$			77		
Turn-off fall time	t_f			82		
Source-Drain Diode characteristics						
Diode Forward voltage	V_{SD}	$V_{GS} = 0V, I_S = 1A, T_J = 25^\circ\text{C}$			1.2	V
Diode Forward Current	I_S				370	A
Reverse Recovery Time	t_{rr}	$I_S = 50A, di/dt = 100A/\mu\text{s}, T_J = 25^\circ\text{C}$		57		nS
Reverse Recovery Charge	Q_{rr}			183		nC

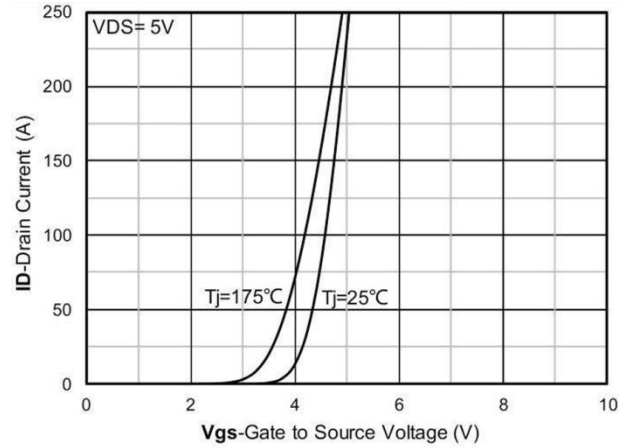
Notes:

- 1) The test condition is $V_{DD}=20V, V_{GS}=10V, L=0.5\text{mH}, R_G=25\Omega$
- 2) Guaranteed by design, not subject to production.

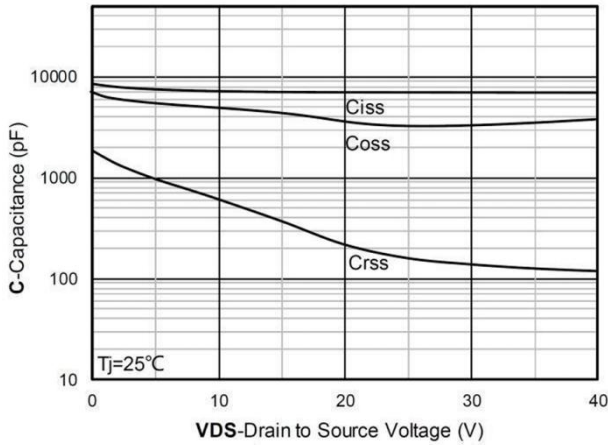
Typical Characteristics



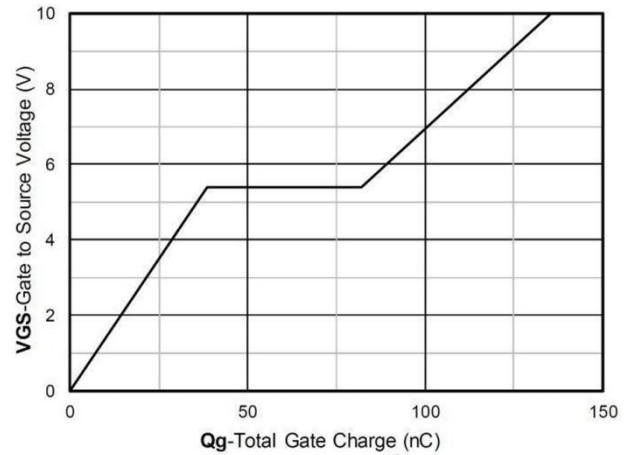
Output Characteristics



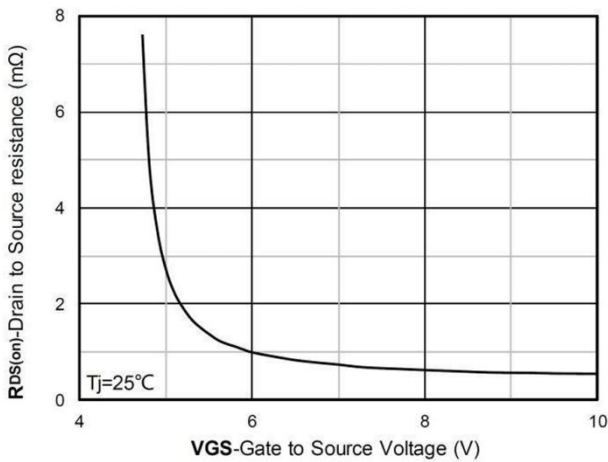
Transfer Characteristics



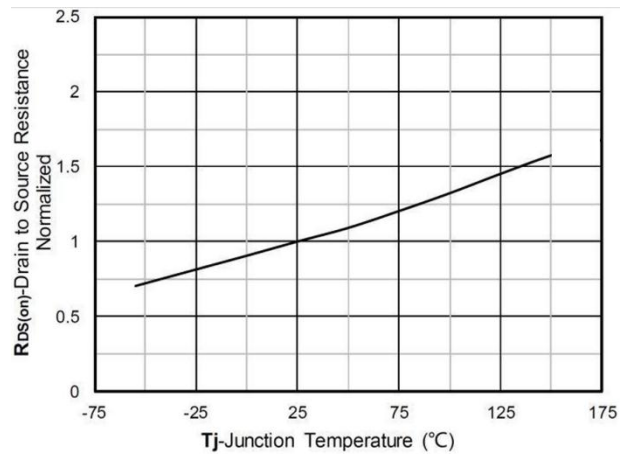
Capacitance Characteristics



Gate Charge

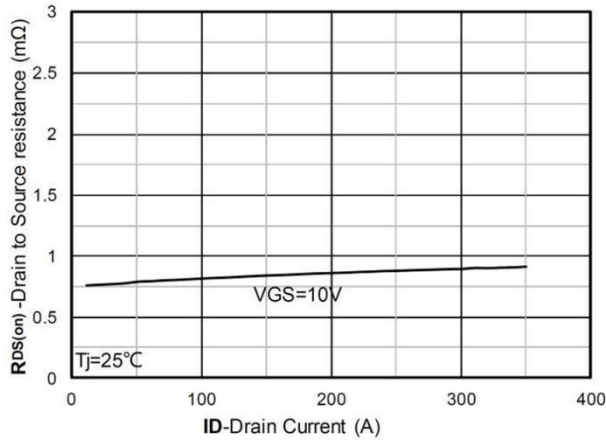


On-Resistance vs Gate to Source Voltage

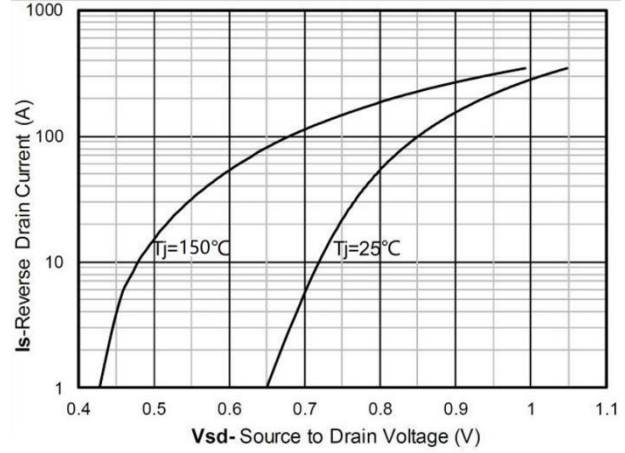


Normalized On-Resistance

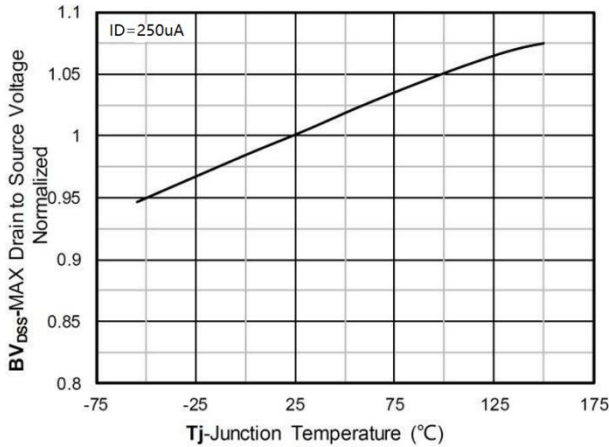
Typical Characteristics



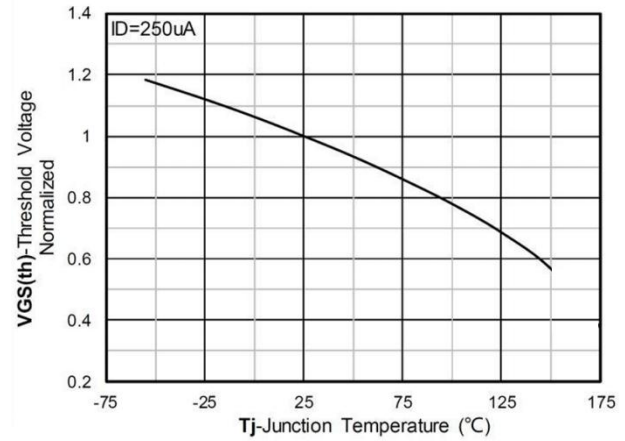
RDS(on) VS Drain Current



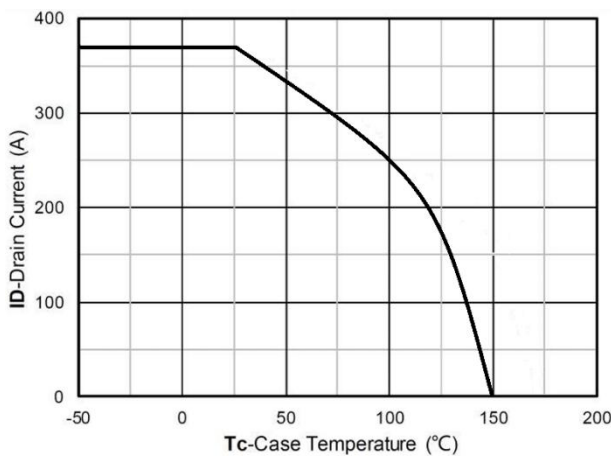
Forward characteristics of reverse diode



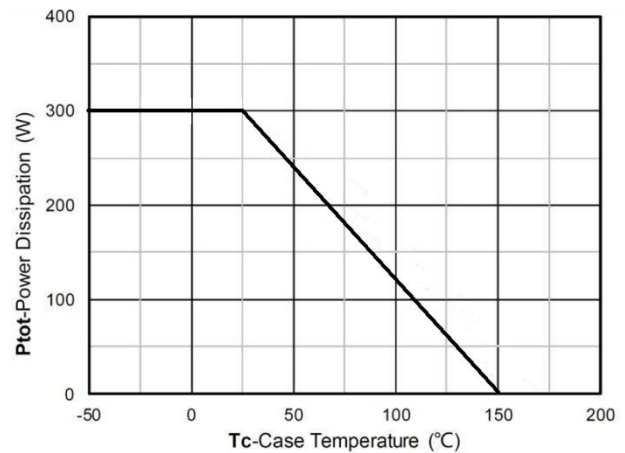
Normalized breakdown voltage



Normalized Threshold voltage

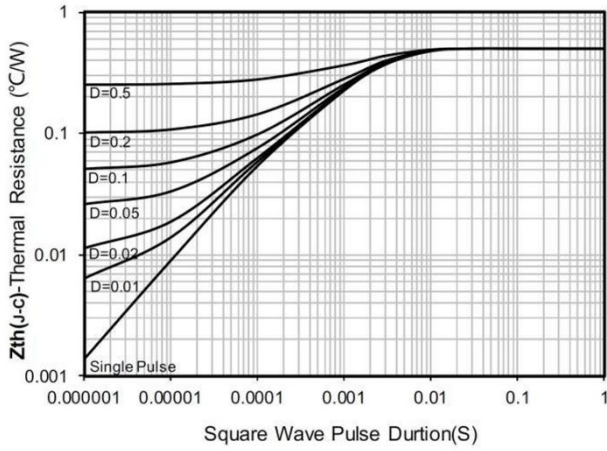


Current dissipation

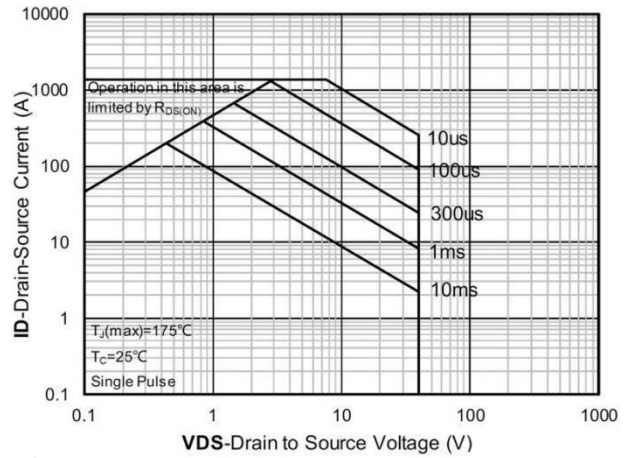


Power dissipation

Typical Characteristics

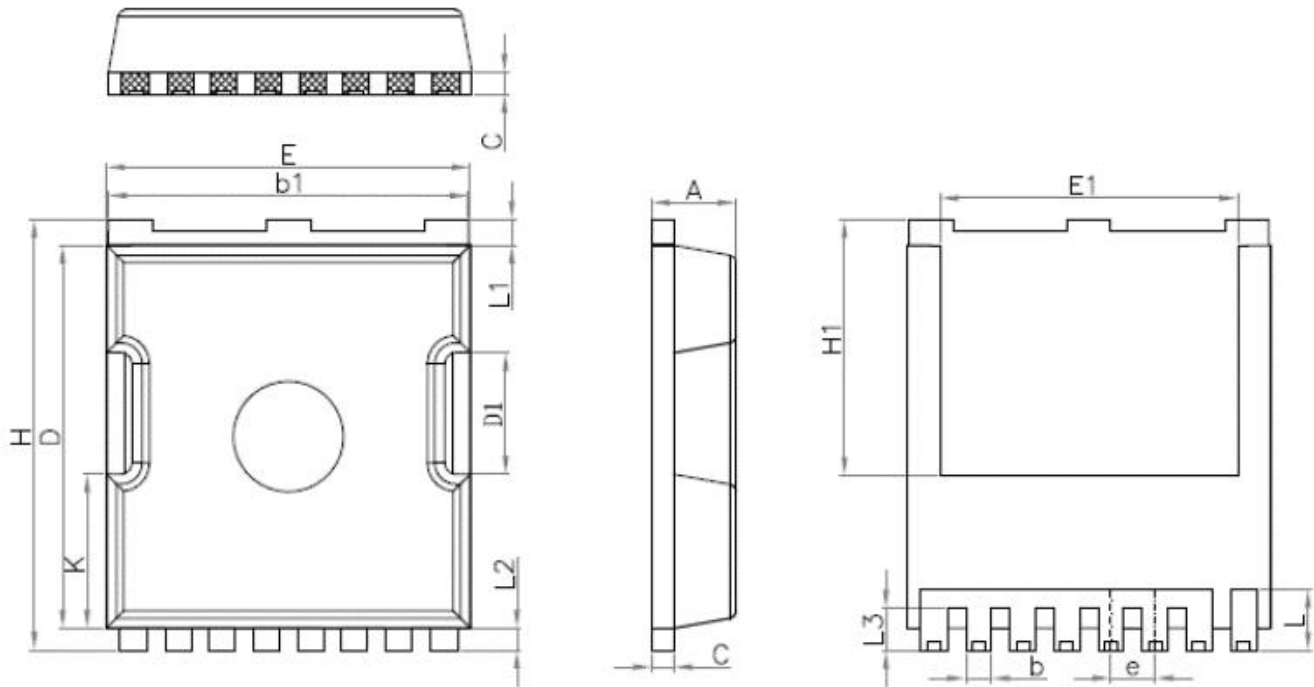


Maximum Transient Thermal Impedance



Safe Operation Area

TOLL Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
b	0.650	0.900	0.026	0.035
b1	9.700	9.900	0.382	0.390
C	0.400	0.700	0.016	0.028
D	10.250	10.550	0.404	0.415
D1	2.850	3.450	0.112	0.136
E	9.650	10.100	0.380	0.398
E1	8.000	9.250	0.315	0.364
e	1.100	1.300	0.043	0.051
H	11.550	11.850	0.455	0.467
H1	6.850	7.150	0.270	0.281
K	4.080	4.550	0.161	0.179
L	1.500	2.100	0.059	0.083
L1	0.550	0.850	0.022	0.034
L2	0.450	0.750	0.018	0.030
L3	1.050	1.400	0.041	0.055