

### Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	$I_D$
100V	1.5mΩ@10V	380A

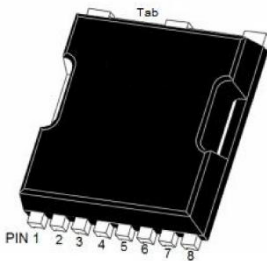
### Feature

- Excellent gate charge and  $R_{DS(on)}$  product(FOM)
- Very low on-resistance  $R_{DS(on)}$

### Application

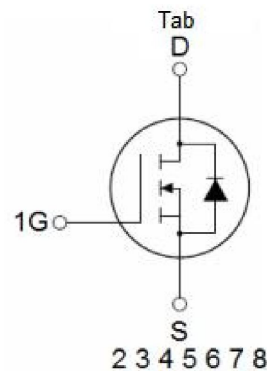
- DC/DC Converter
- Ideal for high-frequency switching and synchronous rectification

### Package

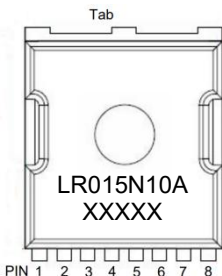


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### Circuit diagram



### Marking



### Absolute maximum ratings (T<sub>C</sub>=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V <sub>DS</sub>	100	V
Gate-Source Voltage	V <sub>GS</sub>	±20	V
Continuous Drain Current	I <sub>D</sub>	380	A
Continuous Drain Current(T <sub>C</sub> =100°C)	I <sub>D</sub> (100°C)	266	A
Pulsed Drain Current	I <sub>DM</sub>	1520	A
Power Dissipation	P <sub>D</sub>	405	W
Derating Factor		2.7	W/°C
Thermal Resistance,Junction-to-Case	R <sub>θJC</sub>	0.37	°C/W
Single pulse avalanche Energy <sup>1)</sup>	E <sub>AS</sub>	3136	mJ
Junction Temperature	T <sub>J</sub>	175	°C
Storage Temperature Range	T <sub>STG</sub>	-55 ~ +175	°C

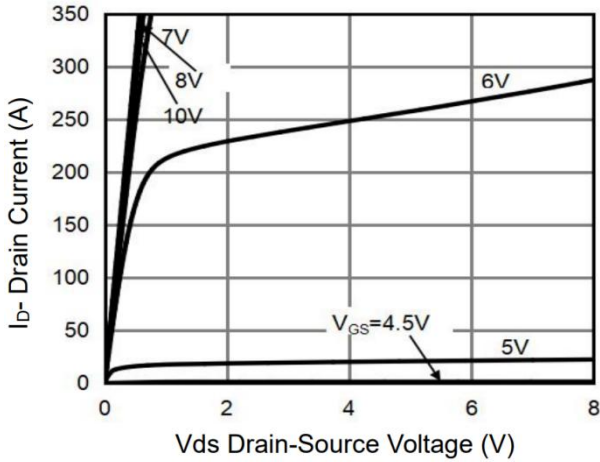
### Electrical characteristics (T<sub>C</sub>=25°C unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
<b>Static Characteristics</b>						
Drain-source breakdown voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> =250μA	100			V
Zero gate voltage drain current	I <sub>DSS</sub>	V <sub>DS</sub> =100V, V <sub>GS</sub> = 0V			1	μA
Gate-body leakage current	I <sub>GSS</sub>	V <sub>GS</sub> =±20V, V <sub>DS</sub> = 0V			±100	nA
Gate threshold voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	2.0		4.0	V
Drain-source on-resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =20A		1.1	1.5	mΩ
Forward transconductance	g <sub>FS</sub>	V <sub>DS</sub> =10V, I <sub>D</sub> =40A		60		S
<b>Dynamic characteristics<sup>2)</sup></b>						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =50V, V <sub>GS</sub> =0V, f =1MHz		14160		pF
Output Capacitance	C <sub>oss</sub>			5024		
Reverse Transfer Capacitance	C <sub>rss</sub>			114		
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =50V, V <sub>GS</sub> =10V, I <sub>D</sub> =20A		214		nC
Gate-Source Charge	Q <sub>gs</sub>			63.5		
Gate-Drain Charge	Q <sub>gd</sub>			62.5		
Turn-on delay time	t <sub>d(on)</sub>	V <sub>DD</sub> =50V, V <sub>GS</sub> =10V, I <sub>D</sub> =40A, R <sub>G</sub> =1.6Ω		35		nS
Turn-on rise time	t <sub>r</sub>			56		
Turn-off delay time	t <sub>d(off)</sub>			84		
Turn-off fall time	t <sub>f</sub>			36		
<b>Source-Drain Diode characteristics</b>						
Diode Forward voltage	V <sub>SD</sub>	V <sub>GS</sub> =0V, I <sub>S</sub> =20A			1.2	V
Diode Forward Current	I <sub>S</sub>				380	A
Reverse Recovery Time	t <sub>rr</sub>	T <sub>J</sub> = 25°C, I <sub>F</sub> =100A		103		nS
Reverse Recovery Charge	Q <sub>rr</sub>	di/dt = 100A/μs		208		nC

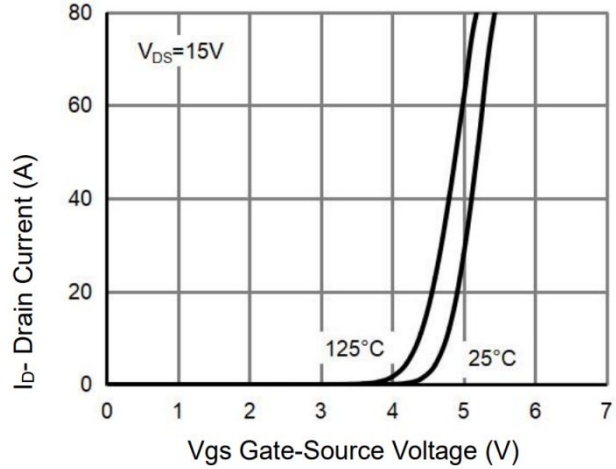
Notes:

- 1) EAS condition : T<sub>J</sub>=25°C, V<sub>DD</sub>=50V, V<sub>G</sub>=10V, L=0.5mH, R<sub>G</sub>=25Ω.
- 2) Guaranteed by design, not subject to production.

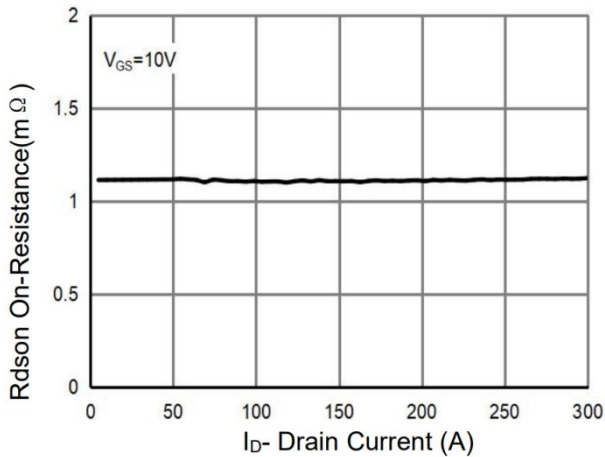
## Typical Characteristics



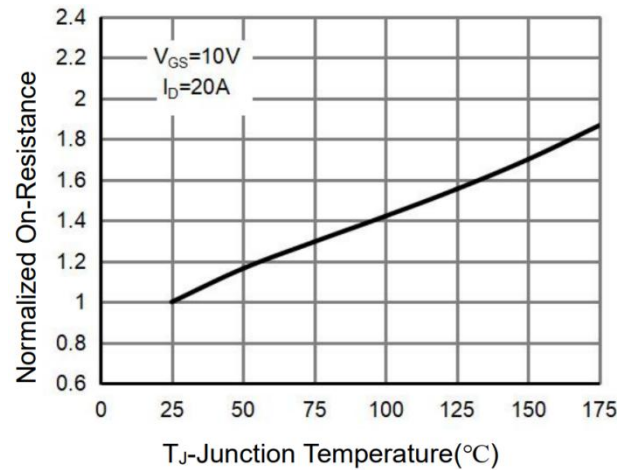
**Figure 1 Output Characteristics**



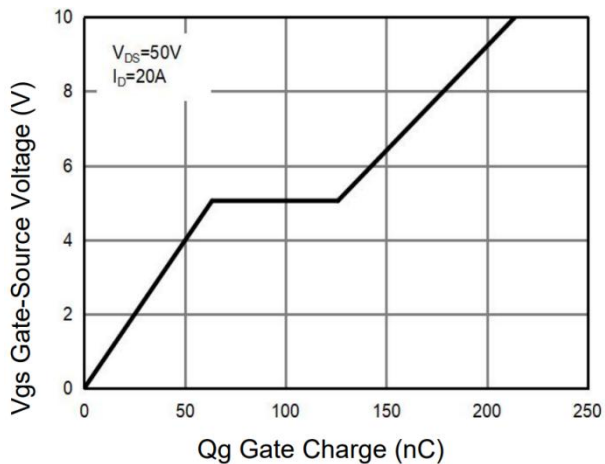
**Figure 2 Transfer Characteristics**



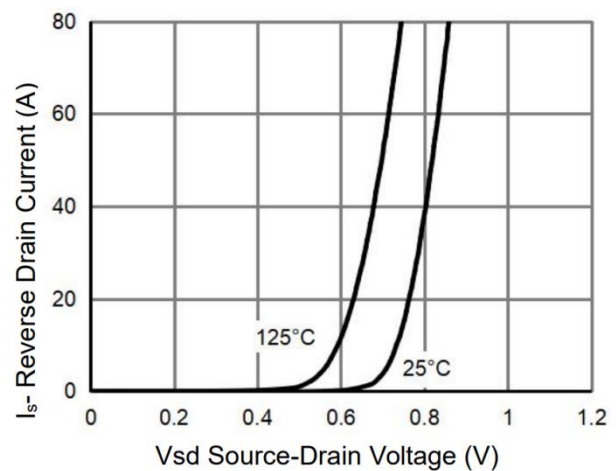
**Figure 3 Rdson- Drain Current**



**Figure 4 Rdson-Junction Temperature**

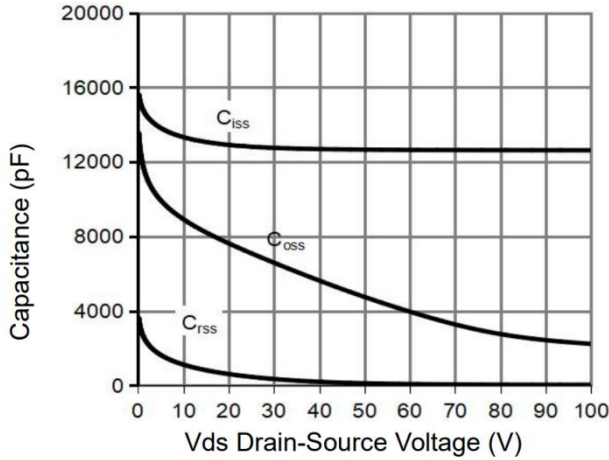


**Figure 5 Gate Charge**

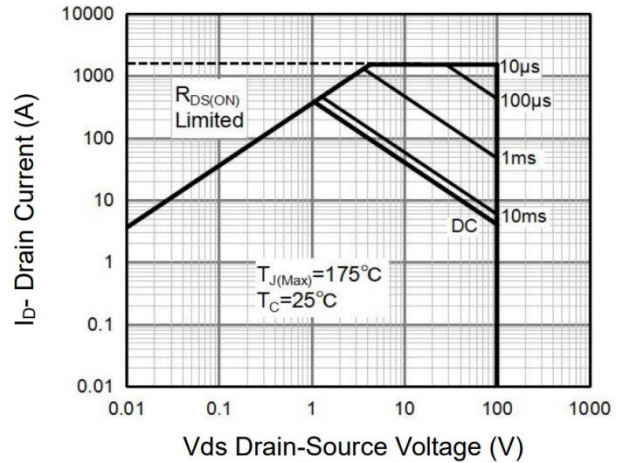


**Figure 6 Source- Drain Diode Forward**

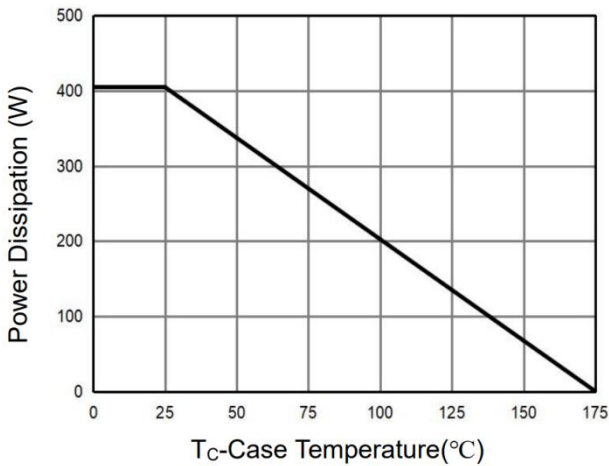
## Typical Characteristics



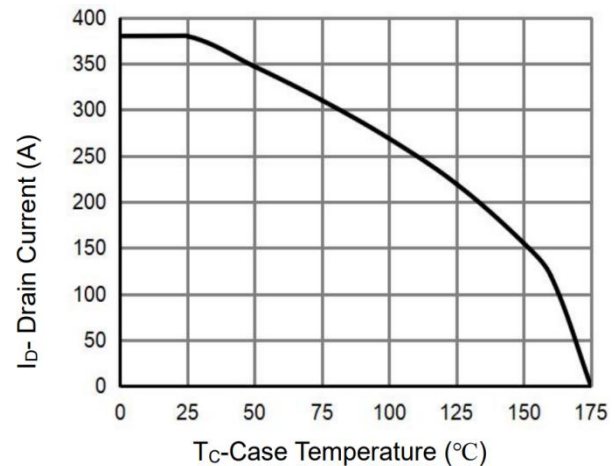
**Figure 7 Capacitance vs Vds**



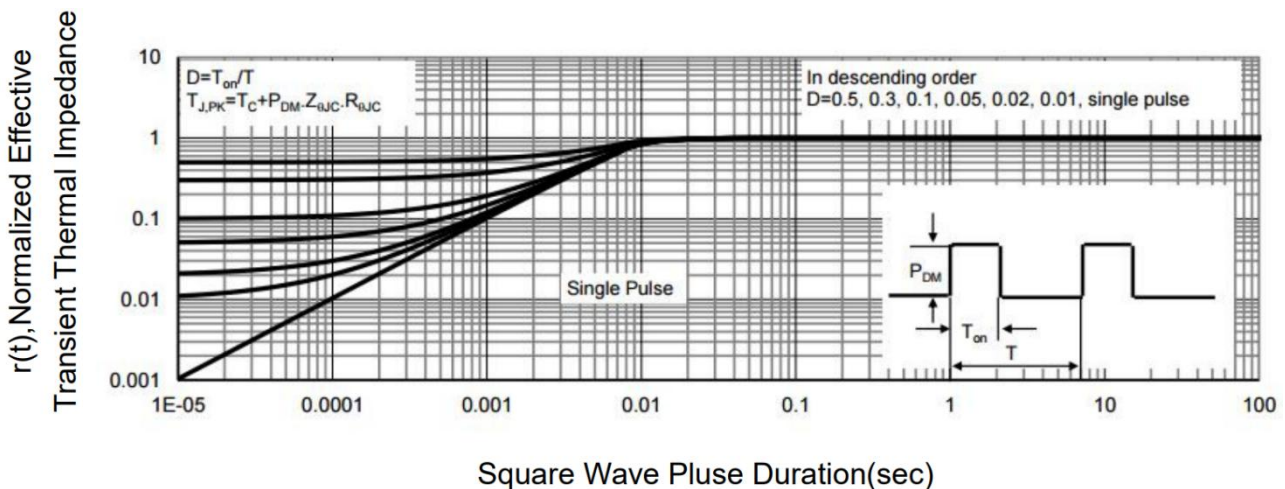
**Figure 8 Safe Operation Area**



**Figure 9 Power De-rating**

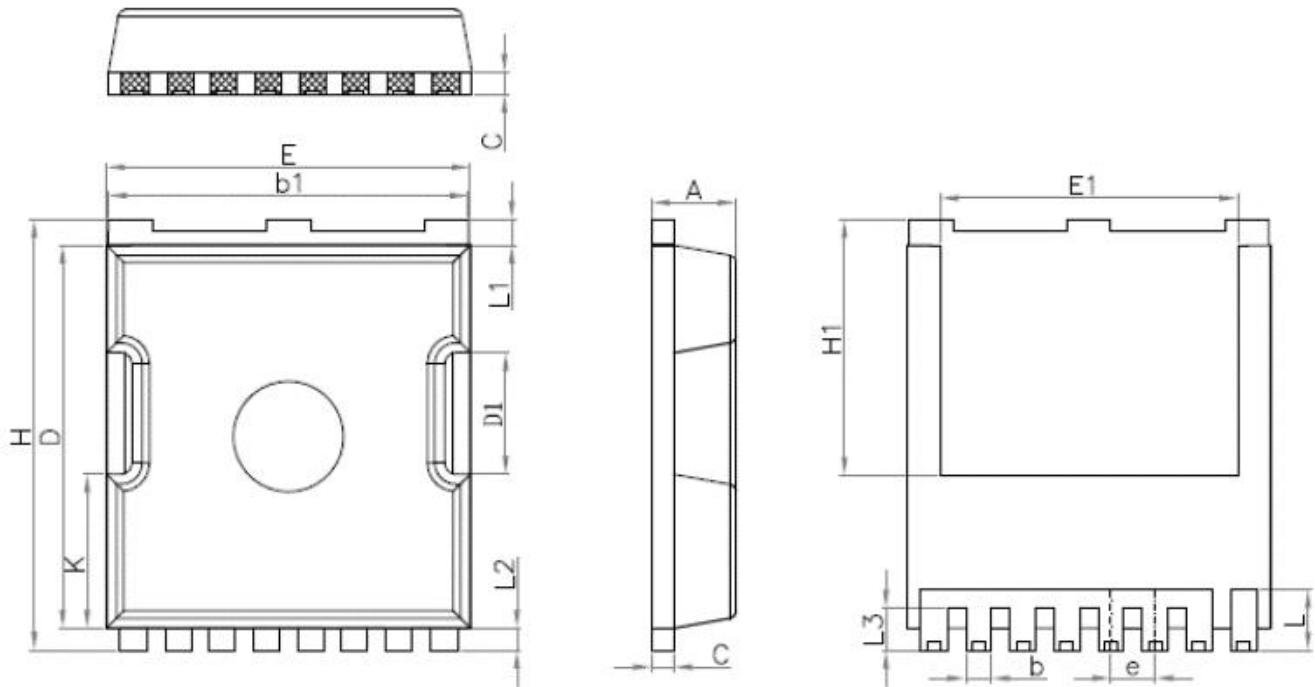


**Figure 10 Current De-rating**



**Figure 11 Normalized Maximum Transient Thermal Impedance**

### 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	0.850	0.026	0.033
b1	9.700	9.900	0.382	0.390
C	0.500	0.700	0.020	0.028
D	10.300	10.500	0.406	0.413
D1	3.150	3.450	0.124	0.136
E	9.700	10.100	0.382	0.398
E1	8.000	8.200	0.315	0.323
e	1.100	1.300	0.043	0.051
H	11.600	11.800	0.457	0.465
H1	6.850	7.050	0.270	0.278
K	4.080	4.280	0.161	0.169
L	1.600	2.100	0.063	0.083
L1	0.600	0.800	0.024	0.031
L2	0.500	0.700	0.020	0.028
L3	1.050	1.300	0.041	0.051