Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
40V	0.65mΩ@10V	350A
	1mΩ@4.5V	

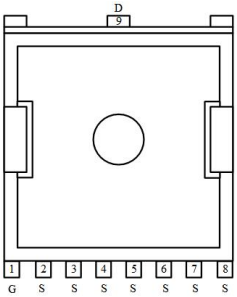
Feature

- Fast Switching
- Low Gate Charge and Rdson
- Advanced Split Gate Trench Technology
- 100% Single Pulse avalanche energy Test

Applications

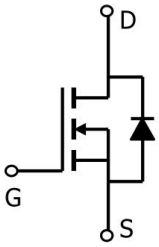
- PWM Application
- Hard switched and high frequency circuits
- Power Management

Package

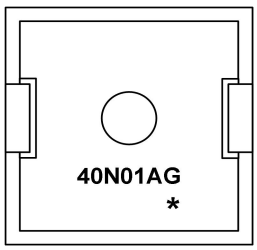


Toll

Circuit diagram



Marking



40N01AG =Device Code
*** =Month Code**

Absolute maximum ratings (Ta=25℃,unless otherwise noted)

Parameter	Symbol	Rating	Units
Drain-Source Voltage	V_{DS}	40	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current(Tc=25℃)	I_D	350	A
Pulsed Drain Current	I_{DM}	1400	A
Single Pulse Avalanche Energy[1]	E_{AS}	1458	mJ
Total Power Dissipation[2](Tc=25℃)	P_D	500	W
Thermal Resistance Junction-Case	$R_{\theta JC}$	0.25	℃/W
Storage Temperature Range	T_{STG}	-55 to 150	℃
Operating Junction Temperature Range	T_J	-55 to 150	℃

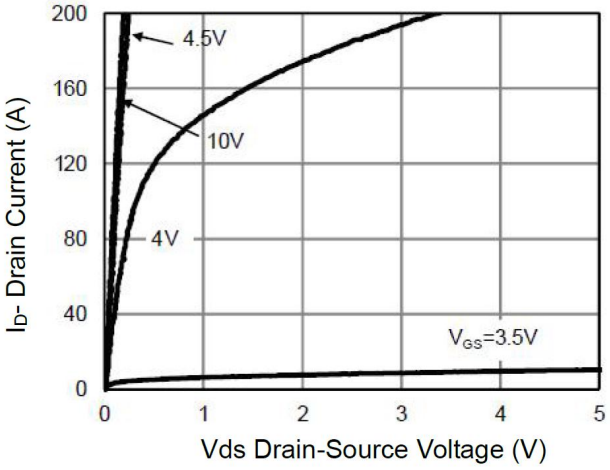
Electrical characteristics (Ta=25℃, unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	VGS=0V , ID=250uA	40	---	---	V
Drain-Source Leakage Current	I_{DSS}	VDS=32V , VGS=0V , TJ=25℃	---	---	1	uA
Gate-Source Leakage Current	I_{GSS}	VGS=±20V , VDS=0V	---	---	±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	VGS=VDS , ID =250uA	1	1.8	2.5	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	VGS=10V , ID=50A	---	0.65	0.82	mΩ
		VGS=4.5V , ID=35A	---	1	1.35	
Dynamic characteristics						
Input Capacitance	C_{iss}	VDS=20V , VGS=0V , f=1MHz	---	11665	---	pF
Output Capacitance	C_{oss}		---	4644	---	
Reverse Transfer Capacitance	C_{rss}		---	142	---	
Switching Characteristics						
Total Gate Charge (4.5V)	Q_g	VDS=20V , VGS=10V , ID=20A	---	178		nC
Gate-Source Charge	Q_{gs}		---	59		
Gate-Drain Charge	Q_{gd}		---	17		
Turn-On Delay Time	$T_{d(on)}$	VDD=20V , VGS=10V , RG=1.6Ω, ID=20A	---	26.5	---	ns
Rise Time	T_r		---	13.8	---	
Turn-Off Delay Time	$T_{d(off)}$		---	112	---	
Fall Time	T_f		---	16.6	---	
Diode Characteristics						
Diode Forward Voltage2	V_{SD}	VGS=0V , IS=1A , TJ=25℃	---	---	1.2	V

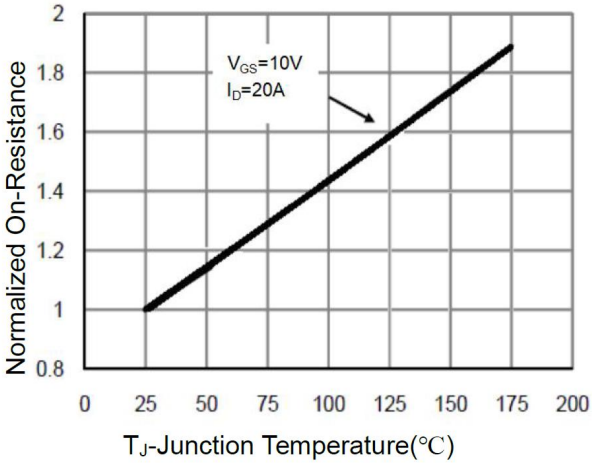
Note :

1. The EAS data shows Max. rating . The test condition is VDD=20V,VGS=10V,L=0.5mH,RG=25Ω
2. The power dissipation is limited by 150℃ junction temperature

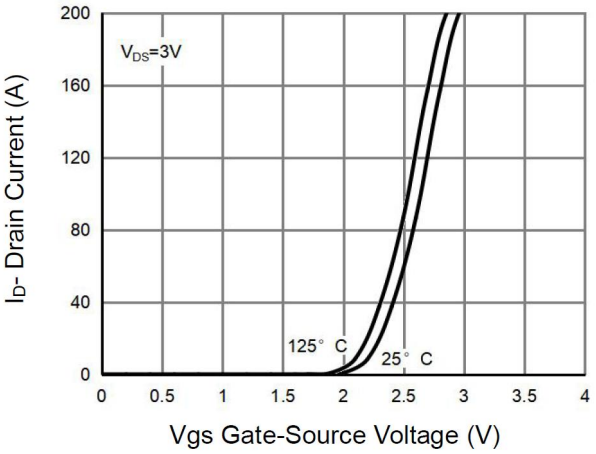
Typical Characteristics



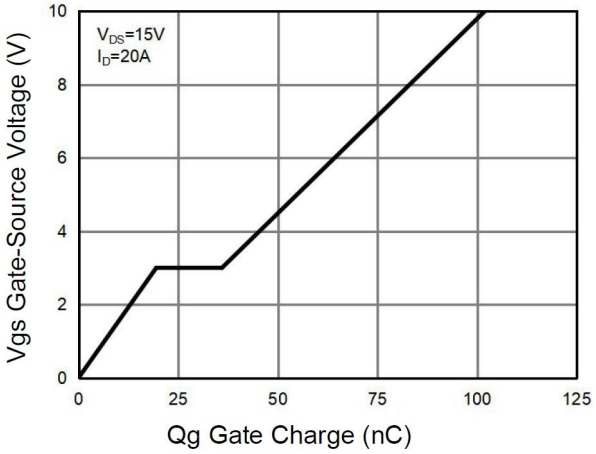
Output Characteristics



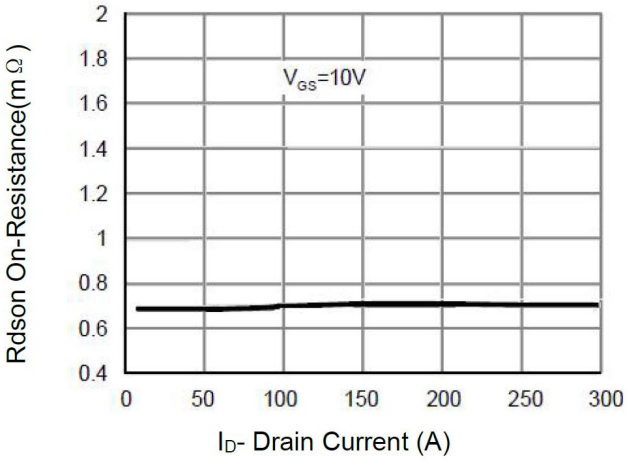
Rdson-Junction Temperature



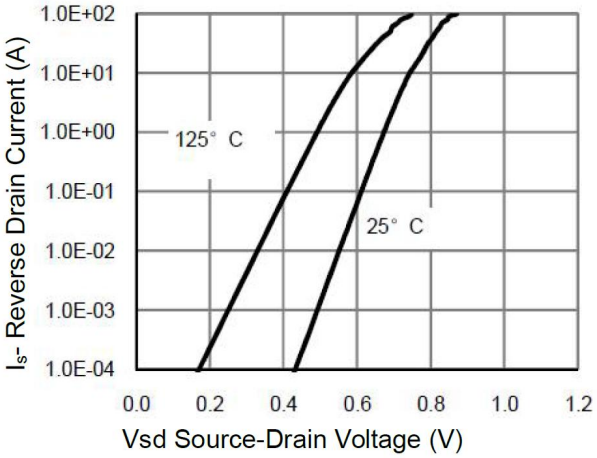
Transfer Characteristics



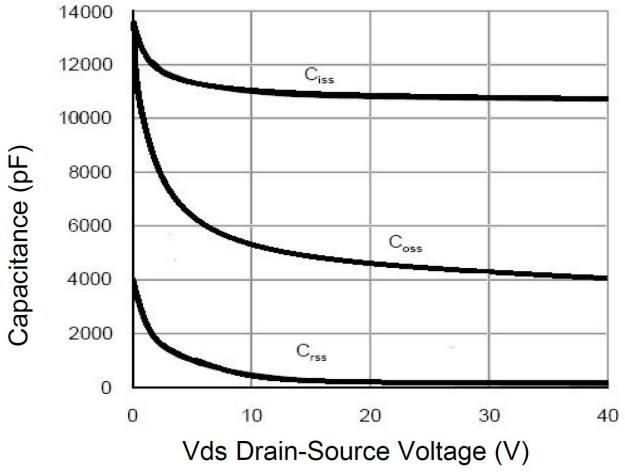
Gate Charge



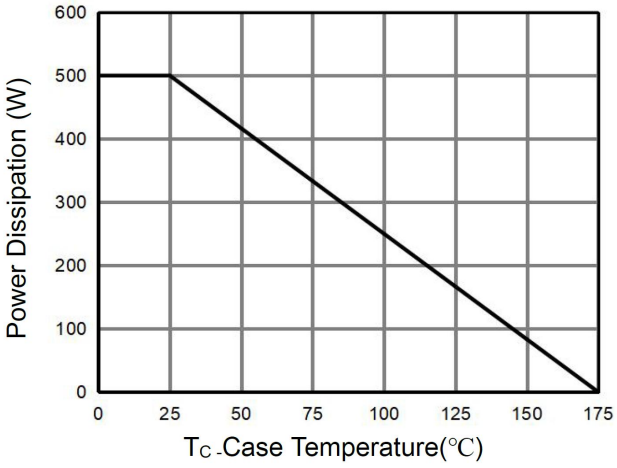
Rdson- Drain Current



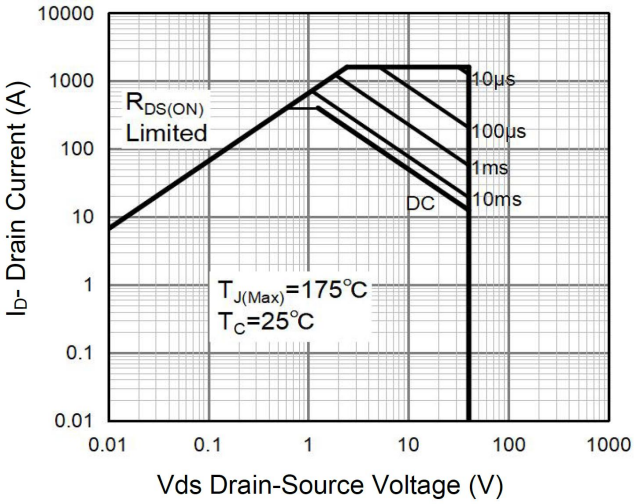
Source- Drain Diode Forward



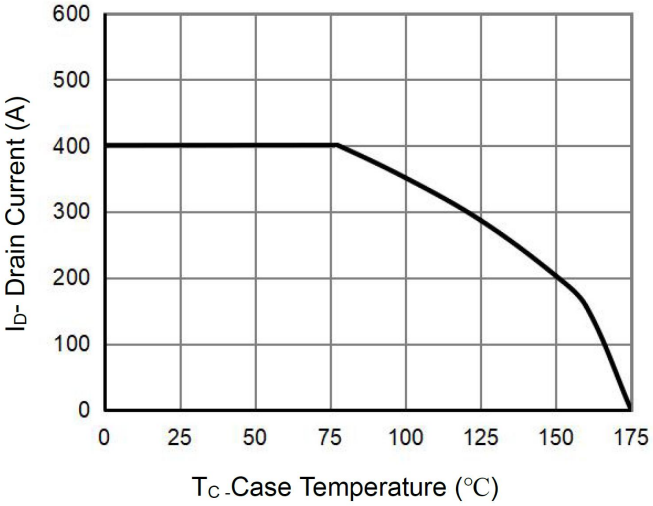
Capacitance vs Vds



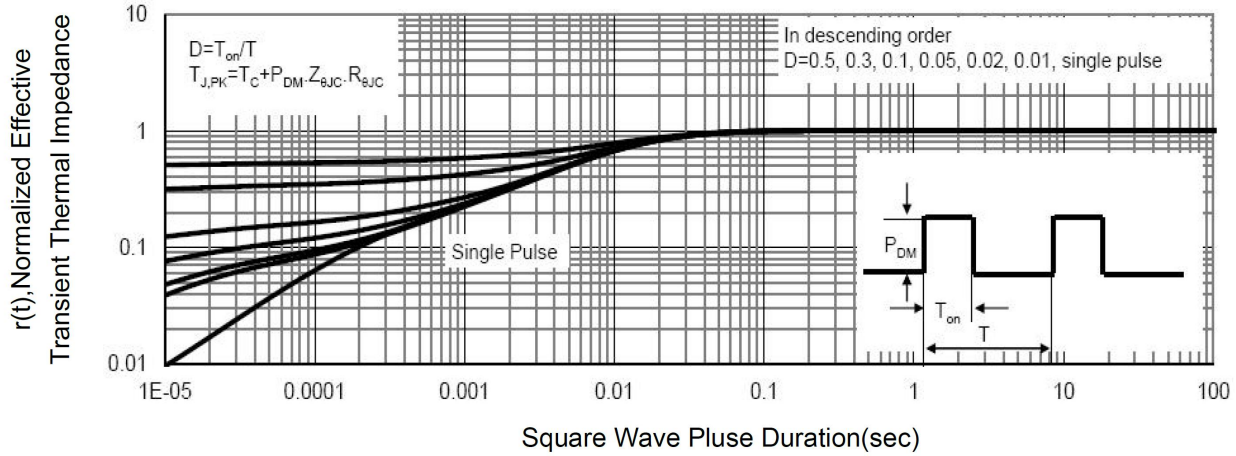
Power De-rating



Safe Operation Area

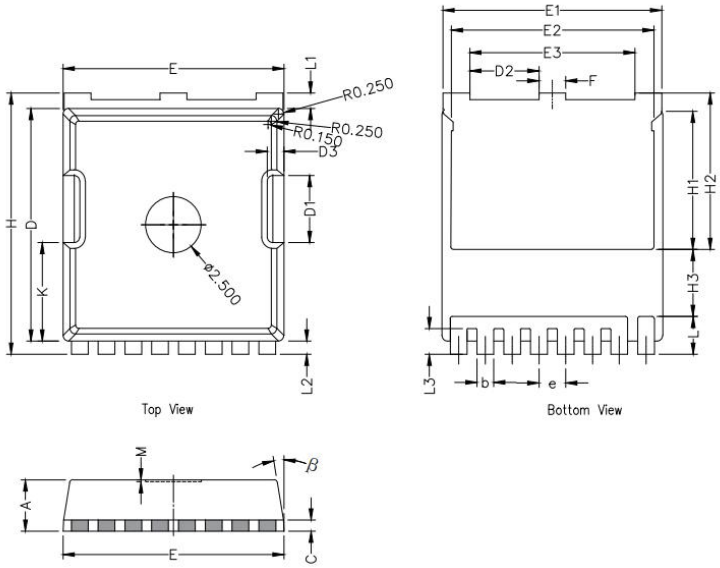


Current De-rating



Normalized Maximum Transient Thermal Impedance

TOLL Package Information



Symbol	Dimensions In Millimeters		
	Min.	Nom.	Max.
A	2.20	2.30	2.40
b	0.65	0.75	0.85
C		0.508 REF	
D	10.25	10.40	10.55
D1	2.85	3.00	3.15
E	9.75	9.90	10.05
E1	9.65	9.80	9.95
E2	8.95	9.10	9.25
E3	7.25	7.40	7.55
e		1.20 BSC	
F	1.05	1.20	1.35
H	11.55	11.70	11.85
H1	6.03	6.18	6.33
H2	6.85	7.00	7.15
H3		3.00 BSC	
L	1.55	1.70	1.85
L1	0.55	0.7	0.85
L2	0.45	0.6	0.75
M		0.08 REF.	
β	8°	10°	12°
K	4.25	4.40	4.55