

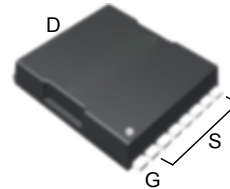
Features

- 100V/420A ,
 $R_{DS(ON)} = 1m\Omega$ (typ.) @ $V_{GS}=10V$
- 100% UIS + R_g Tested
- Reliable and Rugged
- Lead Free and Green Devices Available
(RoHS Compliant)

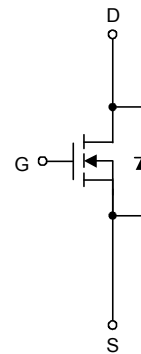
Applications

- Synchronous Rectification.
- Power Management in Inverter Systems.
- Motor Driver.
- Uninterruptible Power Supply.

Pin Description



TOLL



N-Channel MOSFET

Absolute Maximum Ratings ($T_A = 25^\circ\text{C}$ Unless Otherwise Noted)

Symbol	Parameter		Rating	Unit
Common Ratings				
V _{DSS}	Drain-Source Voltage		100	V
V _{GSS}	Gate-Source Voltage		±20	
T _J	Maximum Junction Temperature		150	°C
T _{STG}	Storage Temperature Range		-55 to 150	
I _S	Diode Continuous Forward Current	T _C =25°C	420	A
I _D	Continuous Drain Current	T _C =25°C	420	A
		T _C =100°C	315	
I _{DM} ^b	Pulsed Drain Current	T _C =25°C	1260	
P _D	Maximum Power Dissipation	T _C =25°C	312	W
		T _C =100°C	125	
R _{θJC}	Thermal Resistance-Junction to Case		0.3	°C/W
R _{θJA} ^d	Thermal Resistance-Junction to Ambient		50	°C/W
I _{AS} ^c	Avalanche Current, Single pulse	L=0.5mH	100	A
E _{AS} ^c	Avalanche Energy, Single pulse	L=0.5mH	2500	mJ

Note a : Calculated continuous current based on maximum allowable junction temperature. Bonding wire limitation current is 120A.

Note b : Pulse width limited by maximum junction temperature.

Note c : UIS tested and pulse width limited by maximum junction temperature 150°C (initial temperature $T_J=25^\circ\text{C}$).

Note d : Surface Mounted on 1in^2 pad area.

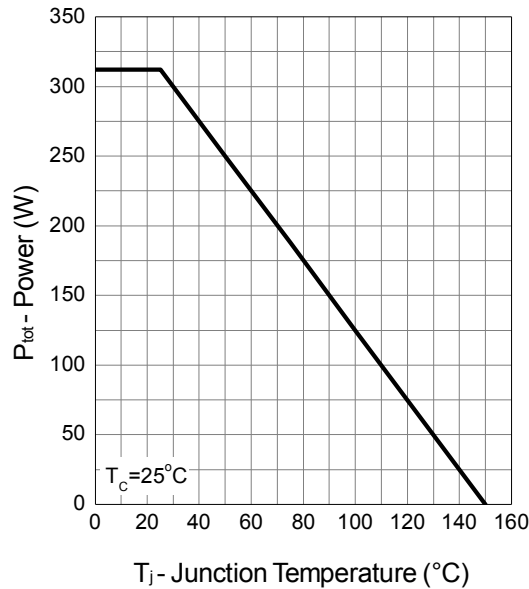
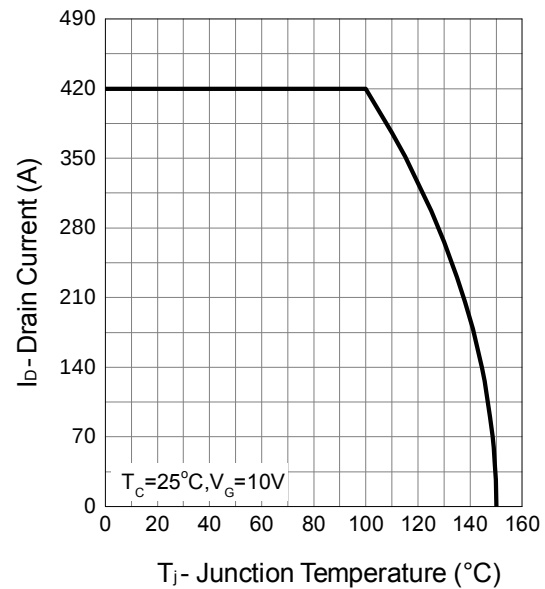
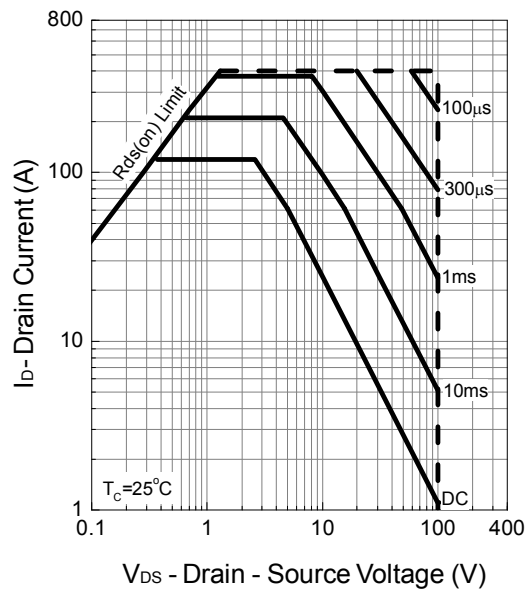
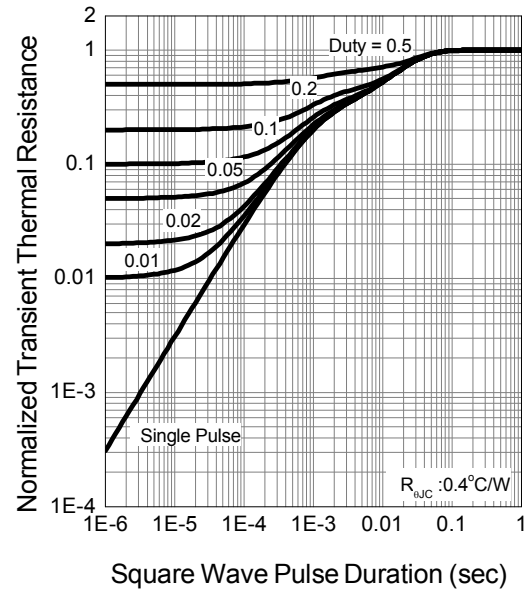
Electrical Characteristics (T_A = 25°C Unless Otherwise Noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =250μA	100	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =80V, V _{GS} =0V	-	-	1	μA
		T _J =85°C	-	-	30	
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =250μA	2	3	4	V
I _{GSS}	Gate Leakage Current	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
R _{DS(ON)} ^e	Drain-Source On-state Resistance	V _{GS} =10V, I _{DS} =40A	-	1	1.5	mΩ
Diode Characteristics						
V _{SD} ^e	Diode Forward Voltage	I _{SD} =40A, V _{GS} =0V	-	0.8	1.3	V
t _{rr}	Reverse Recovery Time	I _{SD} =40A, dI _{SD} /dt=100A/μs	-	90	-	ns
Q _{rr}	Reverse Recovery Charge		-	240	-	nC
Dynamic Characteristics ^f						
R _G	Gate Resistance	V _{GS} =0V, V _{DS} =0V, f=1MHz	-	1.0	-	Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =30V, Frequency=1.0MHz	-	15600	19550	pF
C _{oss}	Output Capacitance		-	2230	-	
C _{rss}	Reverse Transfer Capacitance		-	80	-	
t _{d(ON)}	Turn-on Delay Time	V _{DD} =30V, R _L =30Ω, I _{DS} =1A, V _{GEN} =10V, R _G =6Ω	-	44	80	ns
t _r	Turn-on Rise Time		-	25	45	
t _{d(OFF)}	Turn-off Delay Time		-	114	206	
t _f	Turn-off Fall Time		-	161	290	
Gate Charge Characteristics ^f						
Q _g	Total Gate Charge	V _{DS} =50V, V _{GS} =10V, I _{DS} =40A	-	130	182	nC
Q _{gs}	Gate-Source Charge		-	40	-	
Q _{gd}	Gate-Drain Charge		-	30	-	

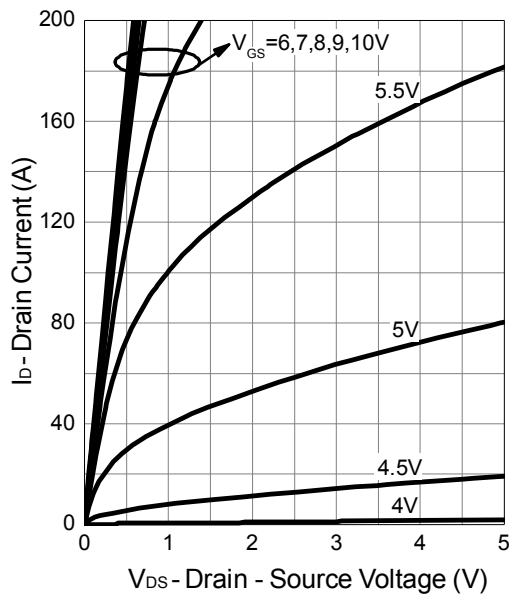
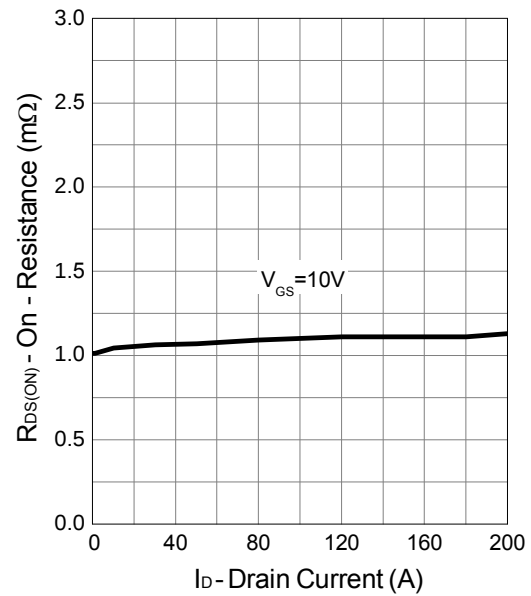
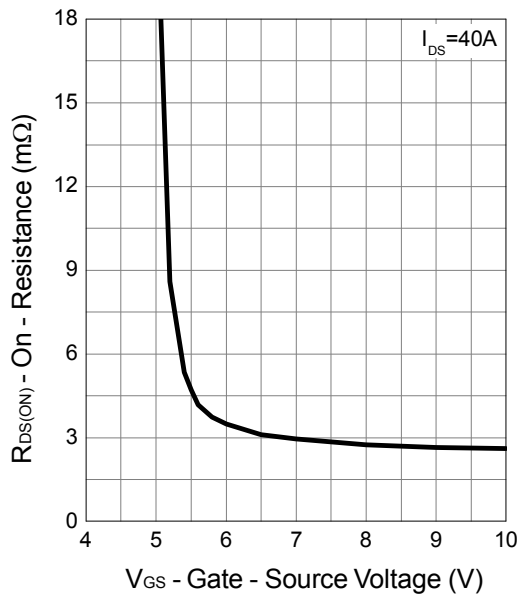
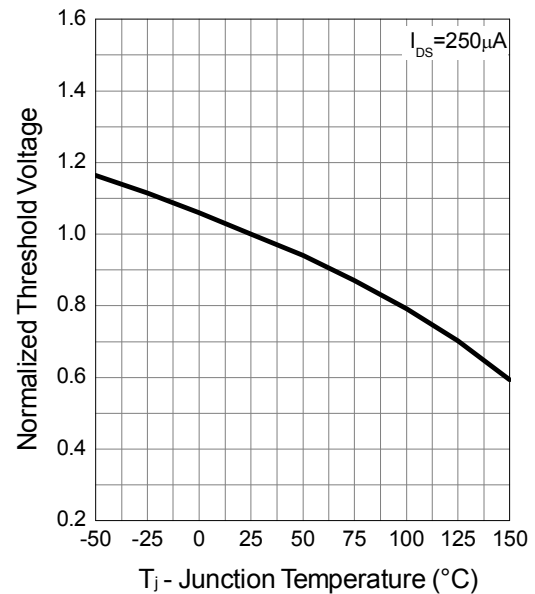
Note e : Pulse test ; pulse width≤300μs, duty cycle≤2%.

Note f : Guaranteed by design, not subject to production testing.

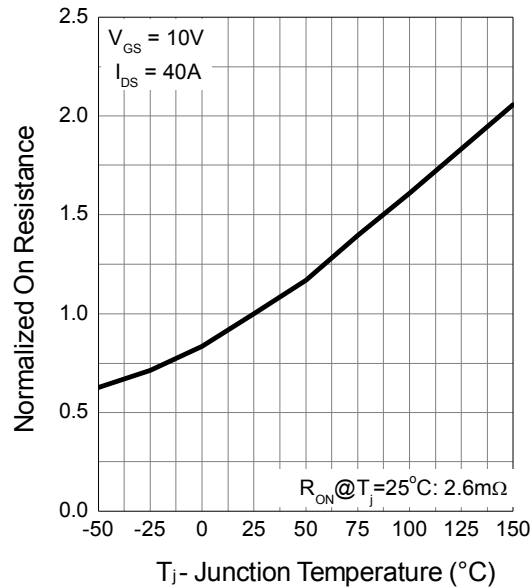
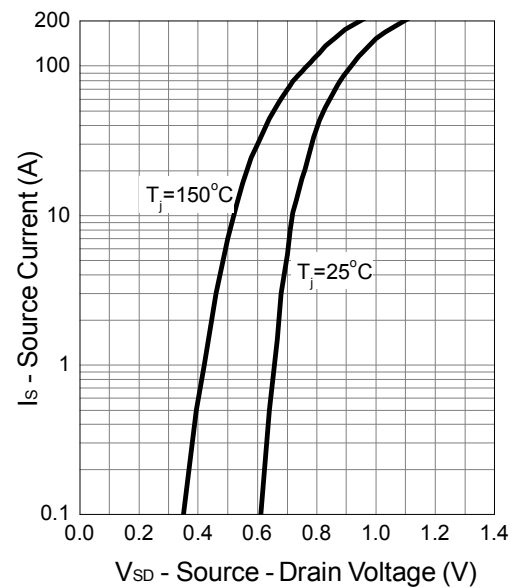
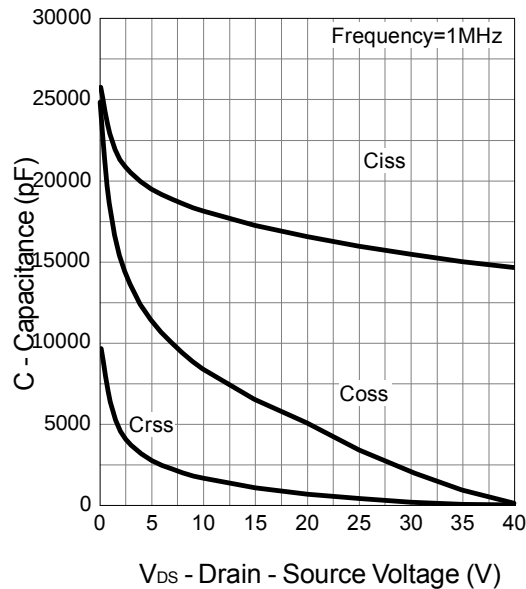
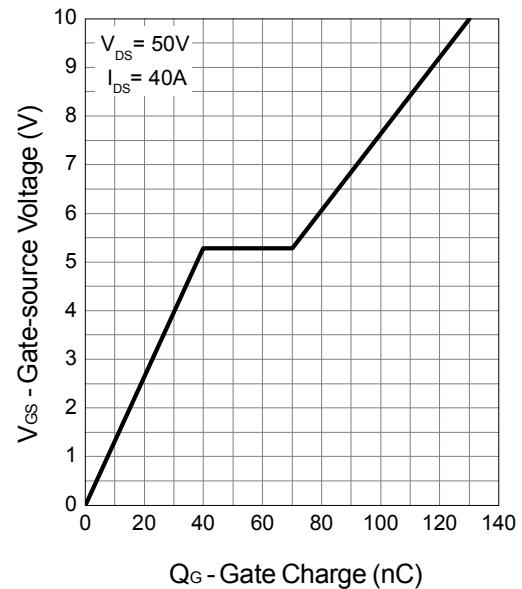
Typical Operating Characteristics

Power Dissipation

Drain Current

Safe Operation Area

Thermal Transient Impedance


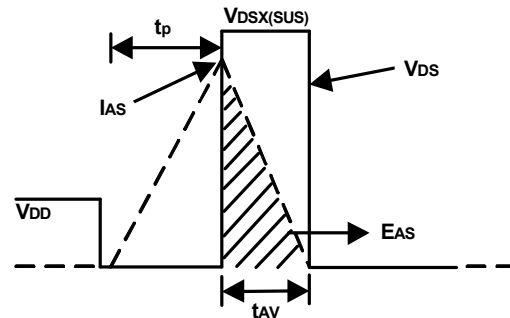
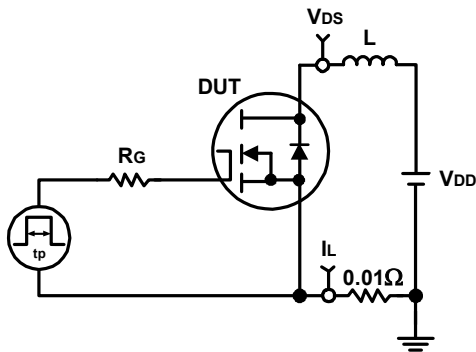
Typical Operating Characteristics (Cont.)

Output Characteristics

Drain-Source On Resistance

Gate-Source On Resistance

Gate Threshold Voltage


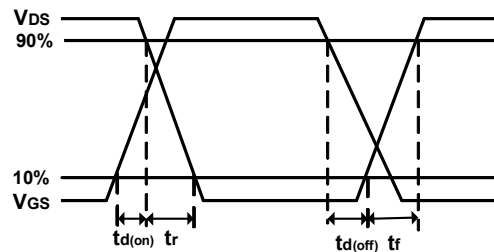
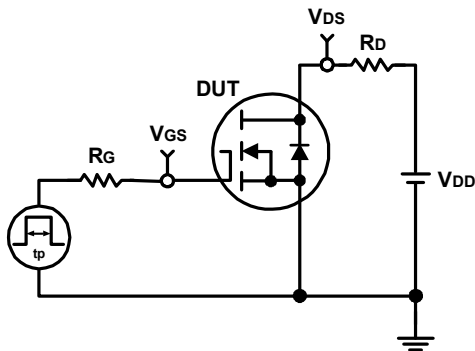
Typical Operating Characteristics (Cont.)

Drain-Source On Resistance

Source-Drain Diode Forward

Capacitance

Gate Charge


Avalanche Test Circuit and Waveforms

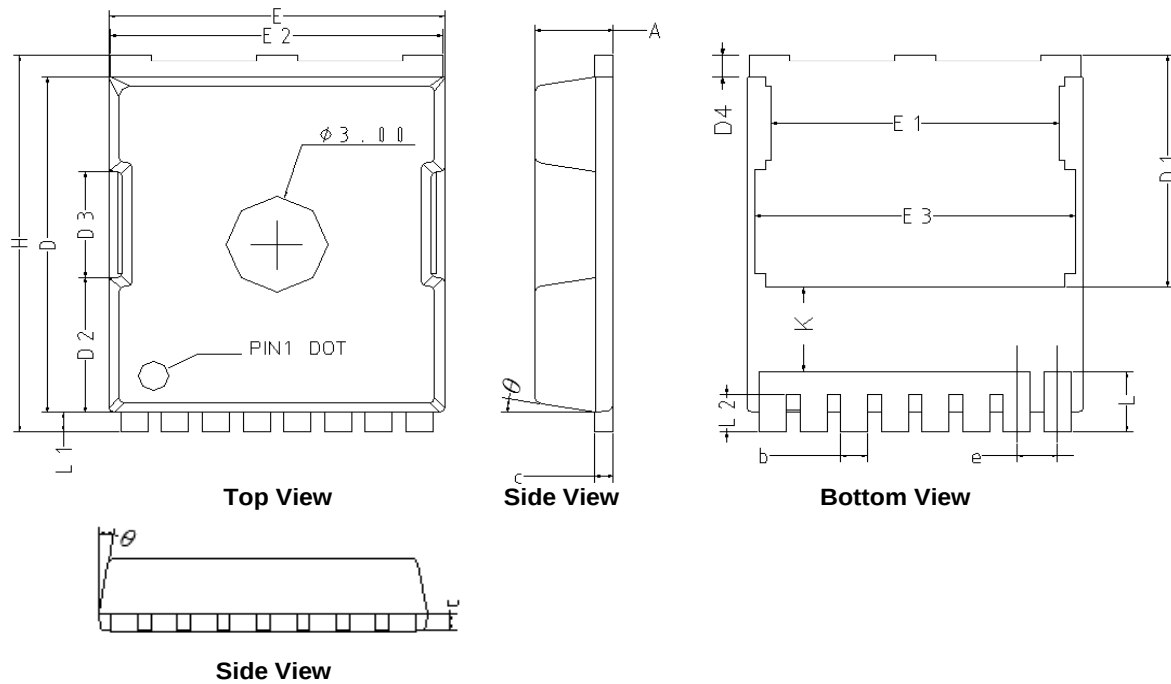


Switching Time Test Circuit and Waveforms



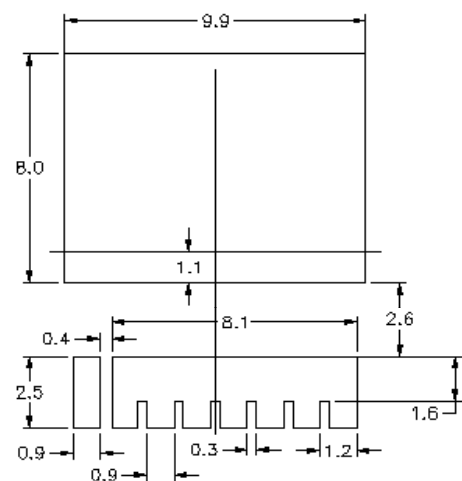
Package Information

TOLL



SYMBOLS	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A	2.20	2.40	0.087	0.094
b	0.70	0.90	0.028	0.035
c	0.40	0.60	0.016	0.024
D	10.23	10.63	0.403	0.419
D1	7.05	7.45	0.278	0.293
D2	3.98	4.38	0.157	0.172
D3	3.10	3.50	0.122	0.138
D4	0.50	0.90	0.020	0.035
E	9.70	10.10	0.382	0.398
E1	8.30	8.70	0.327	0.343
E2	9.60	10.00	0.378	0.394
E3	9.26	9.66	0.365	0.380
H	11.53	11.93	0.454	0.470
e	1.2 BSC		0.0472 BSC	
K	2.43	2.83	0.096	0.111
L	1.65	2.05	0.065	0.081
L1	0.40	0.80	0.016	0.031
L2	0.95	1.35	0.037	0.053
θ	6°	10°	6°	10°

RECOMMENDED LAND PATTERN



UNIT: mm