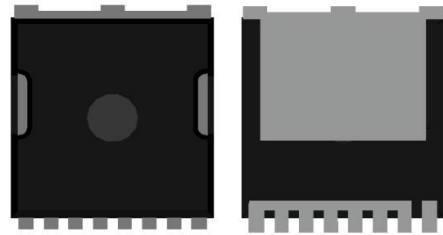


N-Channel Enhancement Mode MOSFET

Symbol	Value	Unit
V_{DS}	150	V
I_D	228	A
$R_{DS(ON)}$	2.9	mΩ



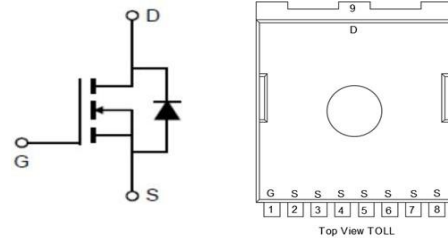
TOLL

Features

- Used advance shielded gate technology
- Extremely low on-resistance
- Excellent dynamic performance

Applications

- Motor control and drive
- Battery management system
- Uninterruptible Power Supplies



Absolute Maximum Ratings (at $T_c = 25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Values	Unit
Drain-Source Voltage	V_{DS}	150	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current Silicon Limited	I_D	$T_c=25^\circ\text{C}$ 228	A
		$T_c=100^\circ\text{C}$ 145	A
Peak Drain Current, Pulsed (Note1)	I_{DM}	749	A
Avalanche Current	I_{AS}	45.8	A
Single Pulse Avalanche Energy (Note2)	E_{AS}	755	mJ
Power Dissipation $T_c=25^\circ\text{C}$	P_{tot}	312	W
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55~150	$^\circ\text{C}$

Thermal Characteristics

Parameter	Symbol	Values	Unit
Thermal Resistance from Junction to Case	$R_{\theta JC}$	0.4	$^\circ\text{C/W}$
Thermal Resistance from Junction to Ambient (Note3)	$R_{\theta JA}$	55	$^\circ\text{C/W}$

Note:

1.Pulse Test: Pulse Width $\leq 100\mu\text{s}$, Duty Cycle $\leq 2\%$, Repetitive rating, pulse width limited by $T_{J(MAX)}=150^\circ\text{C}$.

2.Limited by $T_{J(MAX)}$, starting $T_J=25^\circ\text{C}$, $L=0.5\text{mH}$, $R_g=25\Omega$, $I_D=45.8\text{A}$.

3.Device mounted on FR-4 substrate PC board, 2oz copper, with 1-inch square copper plate in still air

Electrical Characteristics

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
Static characteristics (at TC=25°C unless otherwise specified)						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V; I _D =250uA	150	-	-	V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =150V; V _{GS} =0V	-	-	1	μA
Gate Leakage Current	I _{GSS}	V _{GS} =-20/+20V; V _{DS} =0V	-	-	±100	nA
Gate-Source Threshold Voltage	V _{GS(th)}	V _{GS} =V _{DS} ; I _D =250uA	2.0	-	4.0	V
Drain-Source On-State Resistance	R _{DS(on)}	V _{GS} =18V; I _D =50A; T _J =25°C		2.9	3.6	mΩ
Dynamic characteristics (at T _C =25°C unless otherwise specified)						
Input Capacitance	R _g	f=1MHz	-	4.3	-	Ω
Output Capacitance	g _{fs}	V _{DS} =5V; I _D =20A	-	70	-	S
Reverse Transfer Capacitance	C _{iss}	V _{GS} =0V; V _{DS} =75V; f=1MHz	-	7360	-	pF
Transconductance	C _{oss}		-	856	-	pF
C _{oss} Stored Energy	C _{rss}		-	33	-	pF
Turn-on Energy	Q _g		-	177	-	nC
Turn-off Energy	Q _{gs}	V _{DS} =75V; V _{GS} =10V; I _D =20A	-	39	-	nC
Total Gate Charge	Q _{gd}		-	30	-	nC
Gate-Source Charge	t _{d(on)}		-	35	-	ns
Gate-Drain Charge	t _r	V _{DS} =20V; V _{GS} =10V; R _{g(ext)} =10Ω	-	78	-	ns
Internal Gate Resistor	t _{d(off)}		-	69	-	ns
Turn-on Delay Time	t _f		-	62	-	ns
Body-Diode Parameters						
Drain-Source Diode Forward Voltage	V _{SD}	I _S =20A, V _{GS} =0V	-	-	1.3	V
Body Diode Reverse Recovery Time	t _{rr}	I _S =20A, di/dt=100A/μs	-	117	-	ns
Body Diode Reverse Recovery Charge	Q _{rr}		-	356	-	nC

Characteristics Diagram

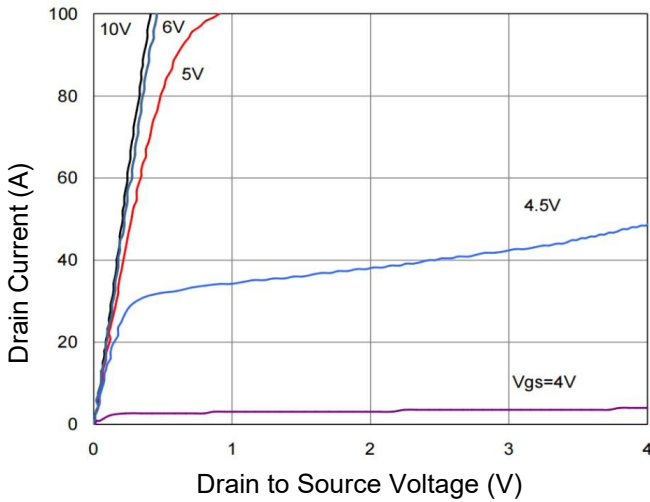


Fig 1: Output Characteristics

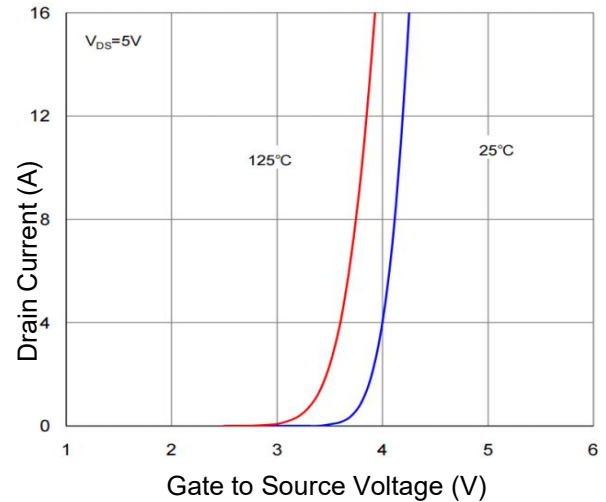


Fig 2: Transfer Characteristics

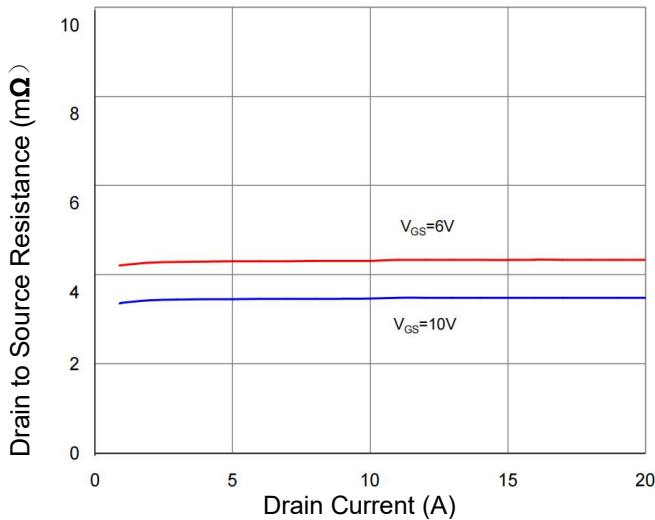


Fig 3: Rds(on) vs Drain Current

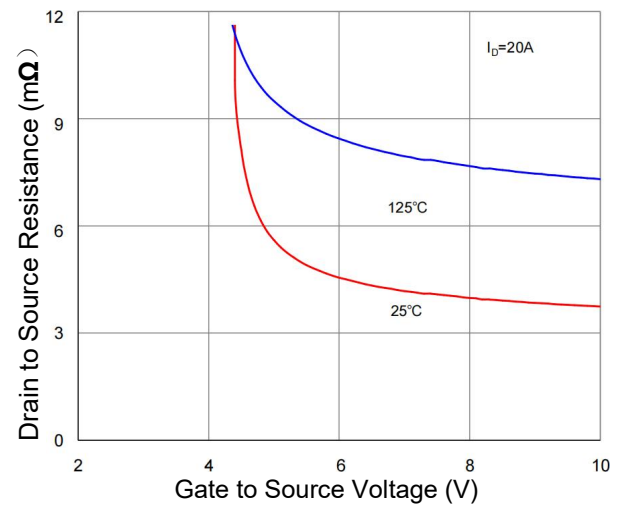


Fig 4: Rds(on) vs Gate Voltage

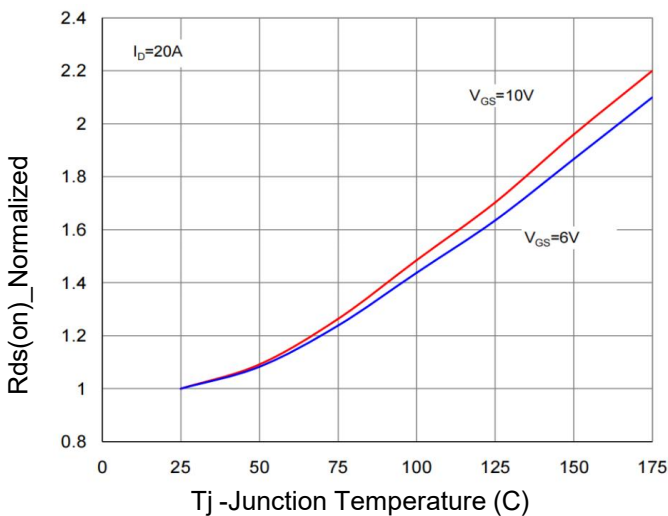


Fig 5: Rds(on) vs. Temperature (Tj)

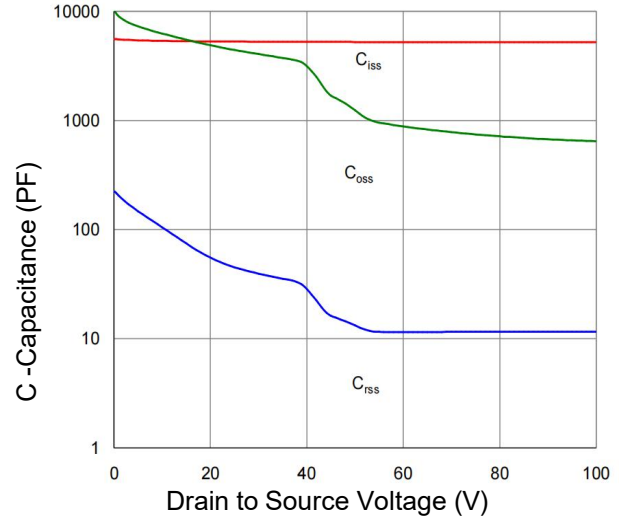


Fig 6: Capacitance Characteristics

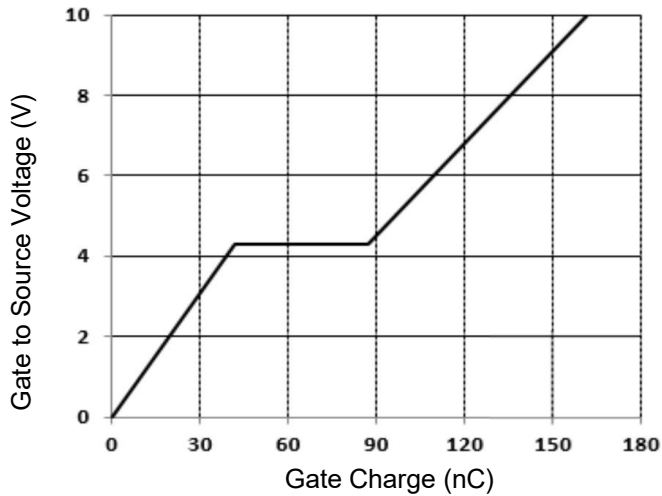


Fig 7: Gate Charge Characteristics

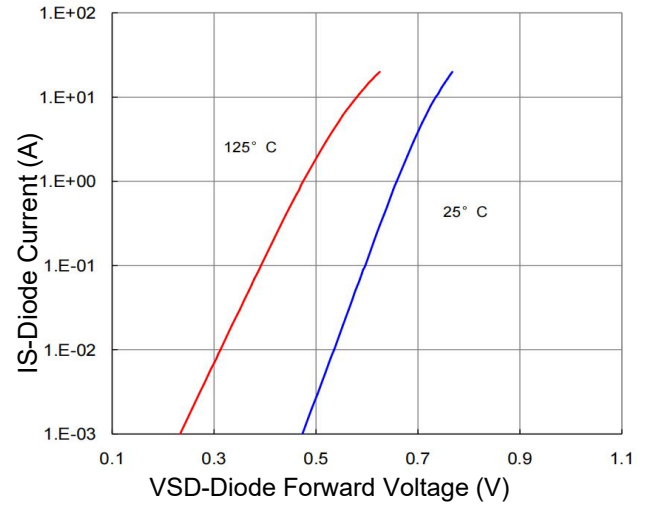


Fig 8: Body-diode Forward Characteristics

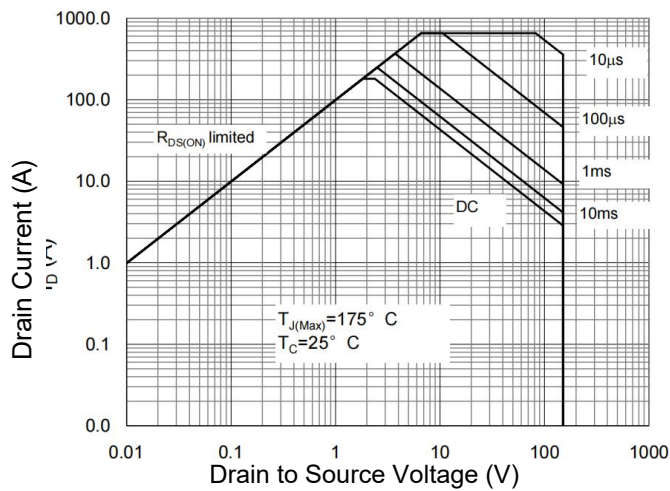


Fig 9: Safe Operating Area

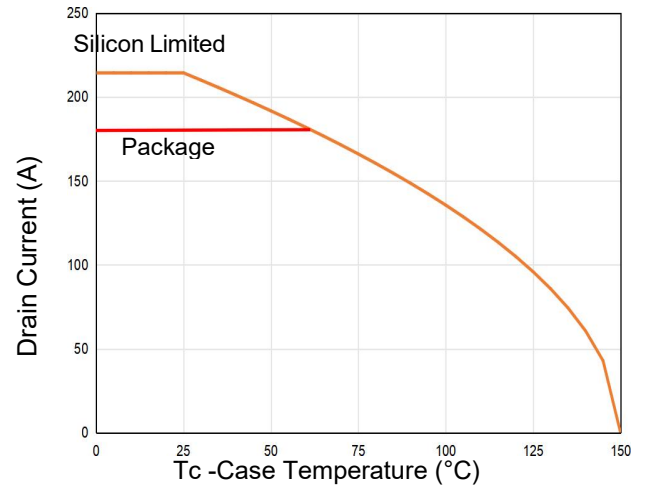


Fig 10: Drain Current Derating

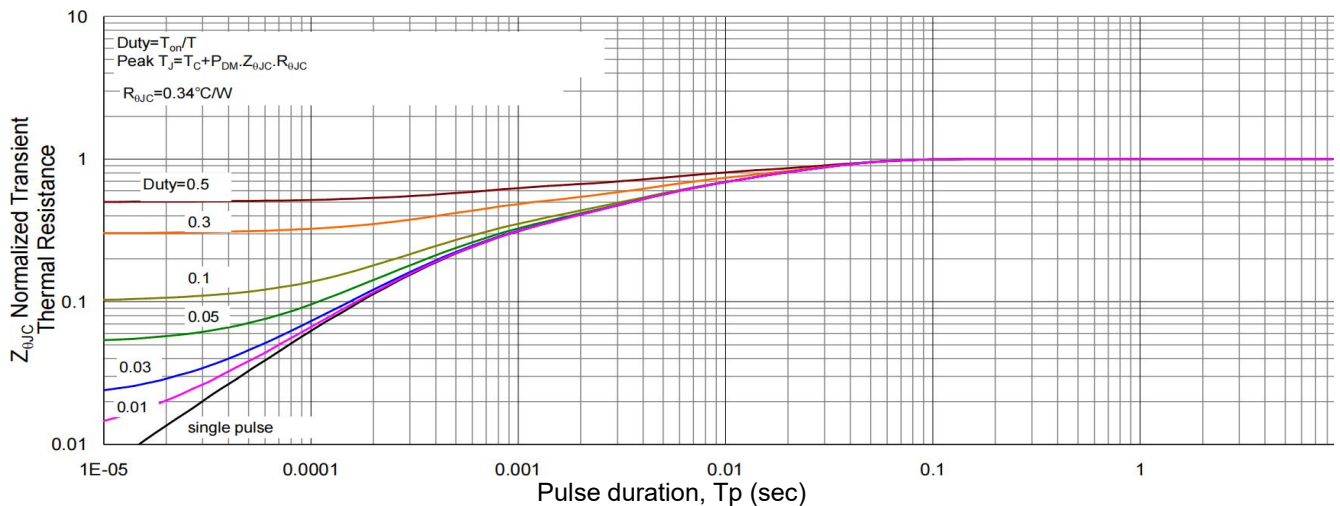
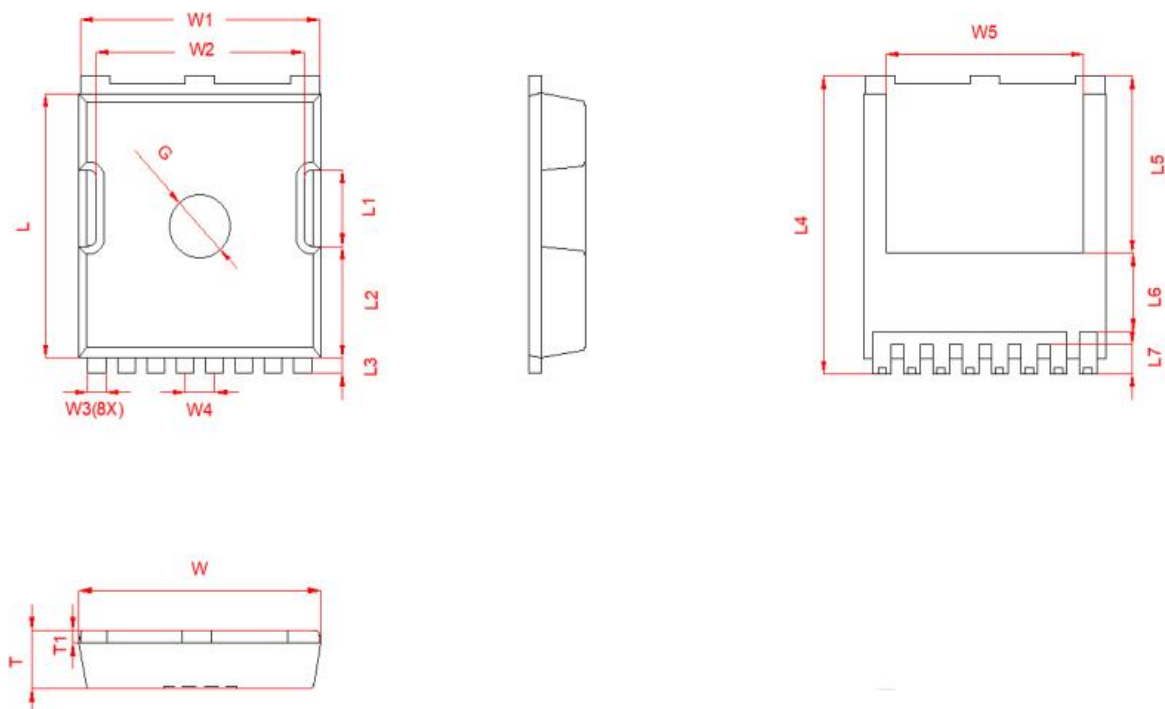


Fig 11: Transient Thermal Impedance

Package Outlines TOLL (Units: mm)



符号	尺寸		符号	尺寸		符号	尺寸	
	Min	Max		Min	Max		Min	Max
W	9.7	10.1	L	10.28	10.58	L6	(3.1)	
W1	9.7	9.9	L1	(3.0)		L7	1.1	1.3
W2	(8.5)		L2	4.2	4.6	T	2.2	2.4
W3	0.6	0.85	L3	0.5	0.7	T1	0.4	0.6
W4	1.1	1.3	L4	11.48	11.88	G(Φ)	(2.5)	
W5	(8.1)		L5	(6.9)				

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