

Features

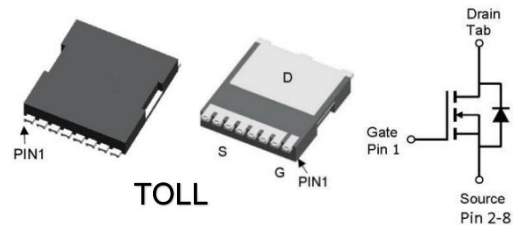
- Extremely low on-resistance $R_{DS(on)}$
- Excellent $Q_g \times R_{DS(on)}$ product(FOM)
- Uses advanced SGT technology

Applications

- Motor control and drive
- Battery management
- DC/DC converter
- General purpose applications

Product Summary

Parameter	Value	Unit
V_{ds}	100	V
$R_{DS(on),MAX}$	2.8	m Ω
I_d	240	A



Package Marking and Ordering Information

Device	Marking	Package	Packing	Tape Width	Qty
RST028S10AL	RST028S10AL	TOLL	Reel&Tape	24mm	2000pcs

Absolute Maximum Ratings

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V _{ds}	100	V
Continuous Drain Current		I _d	-	A
T _C = 25°C(Silicon limit)			240	
T _C = 100°C(Silicon limit)			150	
Pulsed Drain Current (T _C =25°C,tp limited by T _J max)		I _{D pulse}	720	A
Avalanche Energy, Single Pulse (L=0.5mH,R _g =25 Ω) ⁽¹⁾		E _{as}	180	mJ
Gate-Source Voltage		V _{gs}	±20	V
Power Dissipation	T _C = 25°C	P _{tot}	198	W
Operating Junction Temperature		T _J , T _{slg}	-55 to 150	°C

Thermal Resistance

Parameter	Symbol	Max. Value	Unit
Thermal Resistance, Junction – Case	R_{thJC}	0.63	$^\circ\text{C/W}$
Thermal Resistance, Junction – Ambient (min. footprint)	R_{thJA}	40	

Notes:

1. E_{as} is tested at starting $T_j = 25^\circ\text{C}$, $L = 0.1\text{mH}$, $V_{gs} = 10\text{V}$, $V_{ds} = 50\text{V}$.

Electrical Characteristics (at $T_J = 25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Conditions		Min.	Typ.	Max.	Unit
Static Characteristic							
Drain-Source Breakdown Voltage	$V_{(br)dss}$	$V_{GS}=0V, I_D=250\mu A$		100	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$		2.2	3	3.8	V
Zero Gate Voltage Drain Current	I_{dss}	$V_{DS}=100V, V_{GS}=0V$	$T_J=25^{\circ}C$	-	-	1	μA
			$T_J=125^{\circ}C$	-	-	100	μA
Gate-Source Leakage Current	I_{gss}	$V_{DS}=0V, V_{GS}=\pm 20V$		-	-	± 100	nA
Drain-Source On-State Resistance	$R_{ds(on)}$	$V_{GS}=10V, I_D=50A$		-	2.5	2.8	m Ω
Dynamic Characteristic							
Input Capacitance	C_{iss}	$V_{GS}=0V, V_{DS}=50V, f=1MHz$		-	7470	-	pF
Output Capacitance	C_{oss}			-	930	-	pF
Reverse Transfer Capacitance	C_{rss}			-	50	-	pF
Gate Total Charge	Q_g	$V_{GS}=10V, V_{DS}=50V, I_D=50A$		-	130	-	nC
Gate-Source charge	Q_{gs}			-	35	-	nC
Gate-Drain charge	Q_{gd}			-	40	-	nC
Turn-On DelayTime	$t_{d(on)}$			-	50	-	ns
Turn-On Rise Time	t_r	$V_{GS}=10V, V_{DS}=50V, I_D=50A, R_g=6\Omega$		-	74	-	ns
Turn-Off DelayTime	$t_{d(off)}$			-	97	-	ns
Turn-Off Fall Time	t_f			-	30	-	ns
Gate Resistance	R_g	$f=1MHz$		-	1.5	-	Ω
Body Diode Characteristic							
Body Diode Forward Voltage	V_{sd}	$V_{GS}=0V, I_F=50A$		-	0.9	1.2	V
Body Diode Reverse Recovery Time	t_{rr}	$V_{DS}=50V, I_F=50A, di/dt=100A/\mu s$		-	68	-	ns
Body Diode Reverse Recovery Charge	Q_{rr}			-	116	-	nC

Typical Electrical & Thermal Characteristics

Fig.1 Typ. transfer characteristics

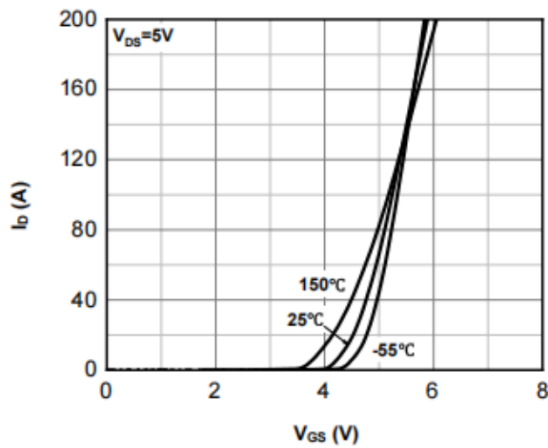


Fig.2 Typ. output characteristics

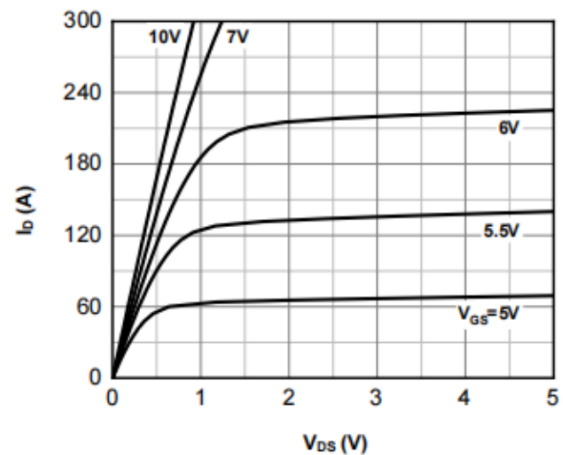


Fig.3 Normalized on-resistance vs drain current

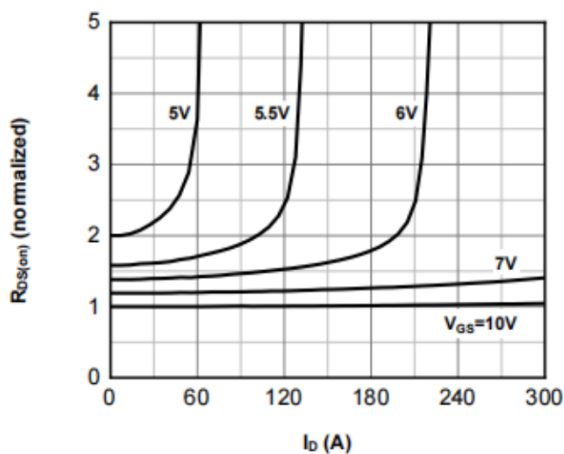


Fig.4 Typ. on-resistance vs gate-source voltage

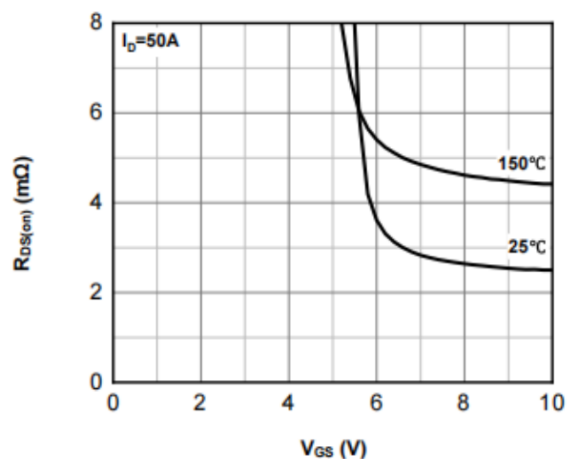


Fig.5 Normalized on-resistance vs junction temperature

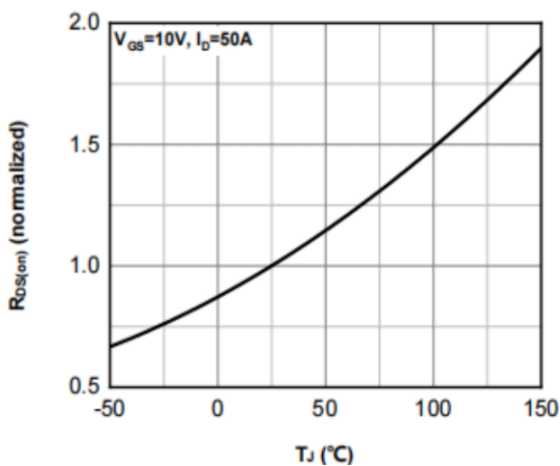
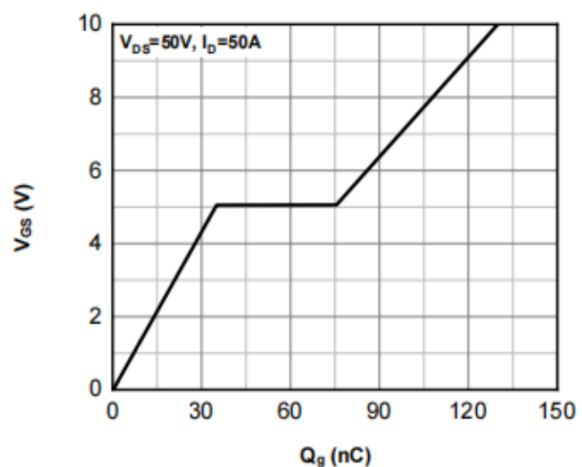


Fig.6 Typ. gate charge



Typical Electrical & Thermal Characteristics

Fig.7 Typ. forward characteristics of body diode

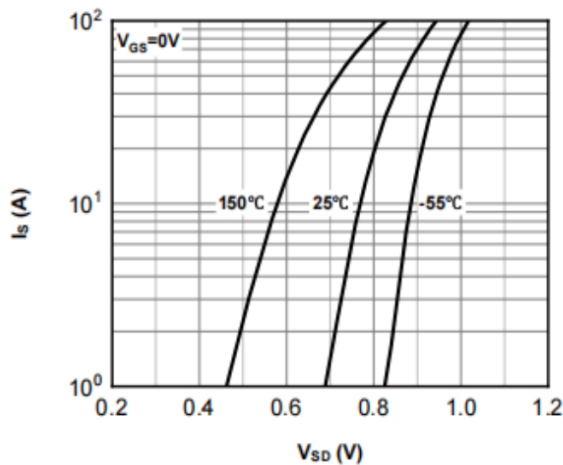


Fig.8 Safe operating area

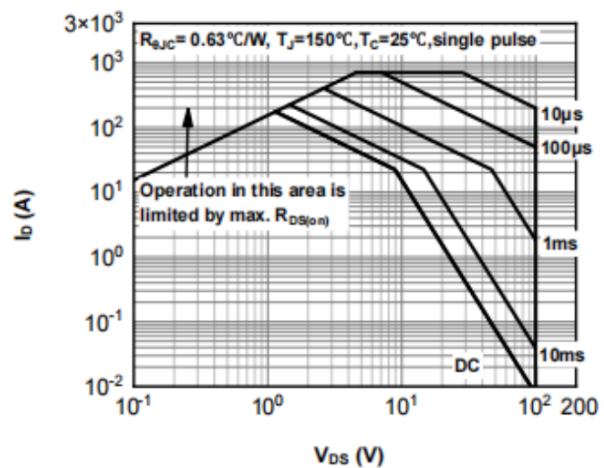


Fig.9 Typ. Capacitance

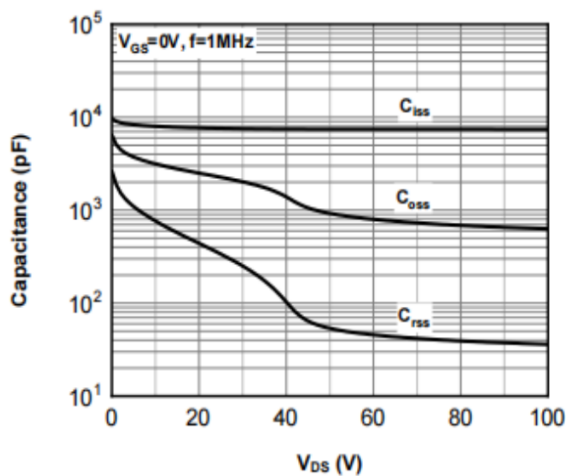


Fig.10 Single pulse maximum power dissipation

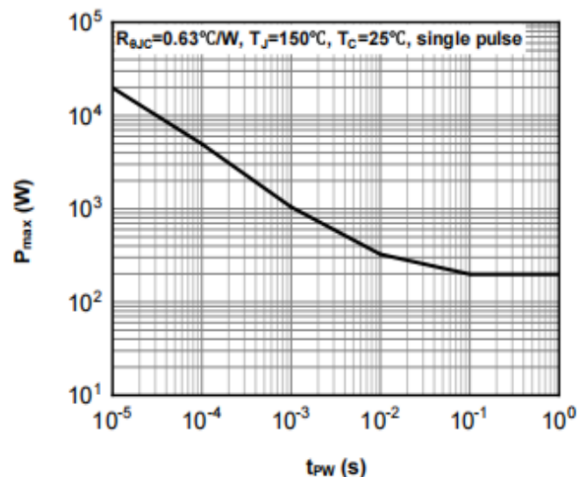


Fig.11 Max. power dissipation vs case temperature

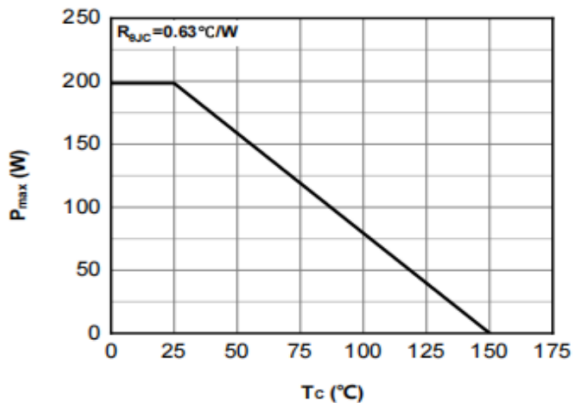
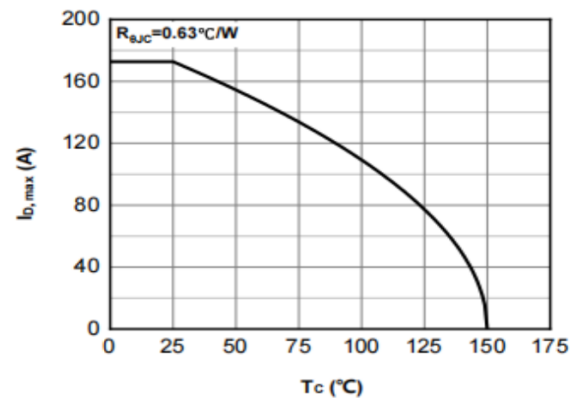


Fig.12 Max. continuous drain current vs case temperature



Typical Electrical & Thermal Characteristics

Fig.13 Normalized $V_{(BR)DSS}$ vs junction temperature

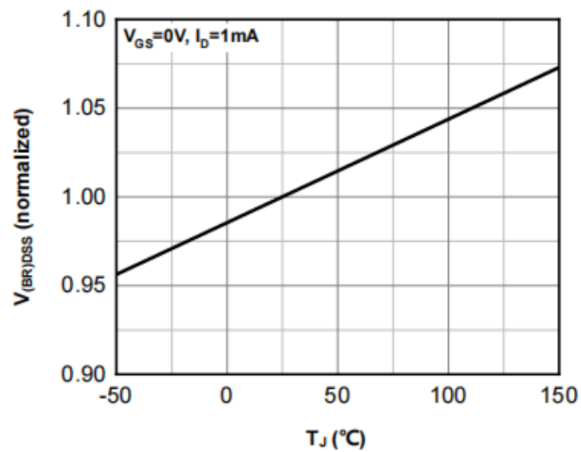


Fig.14 Normalized $V_{GS(th)}$ vs junction temperature

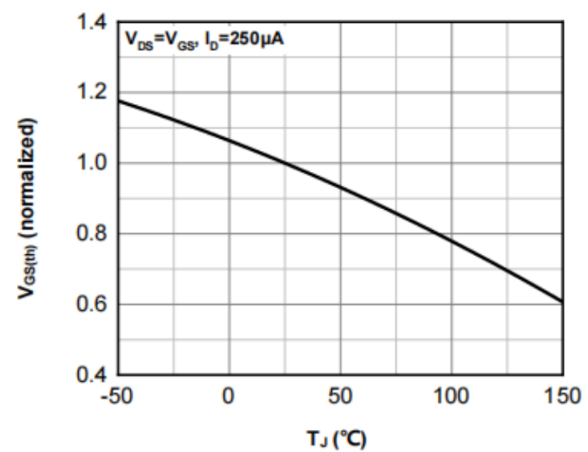
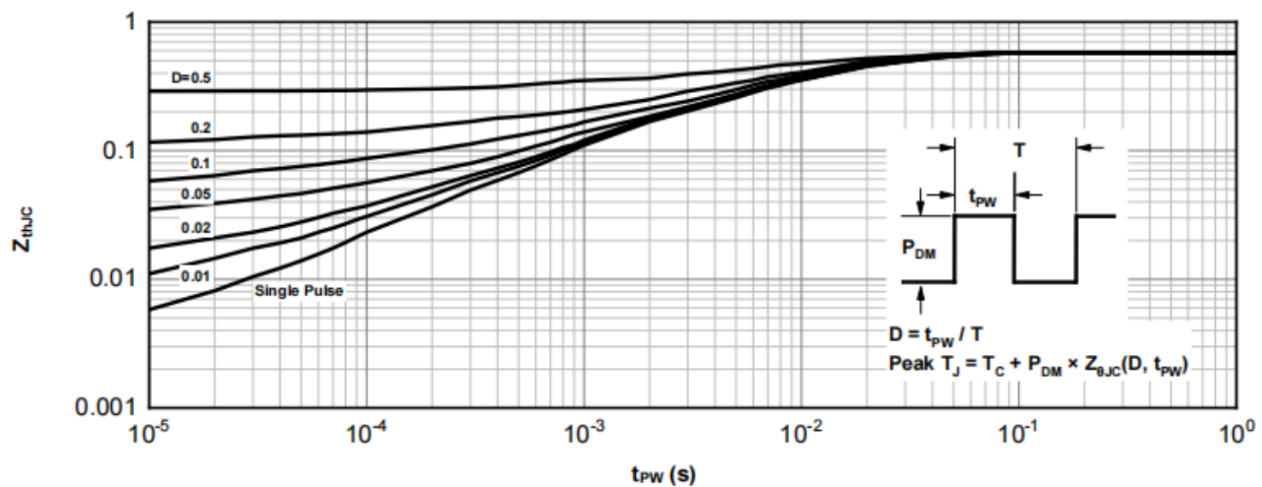
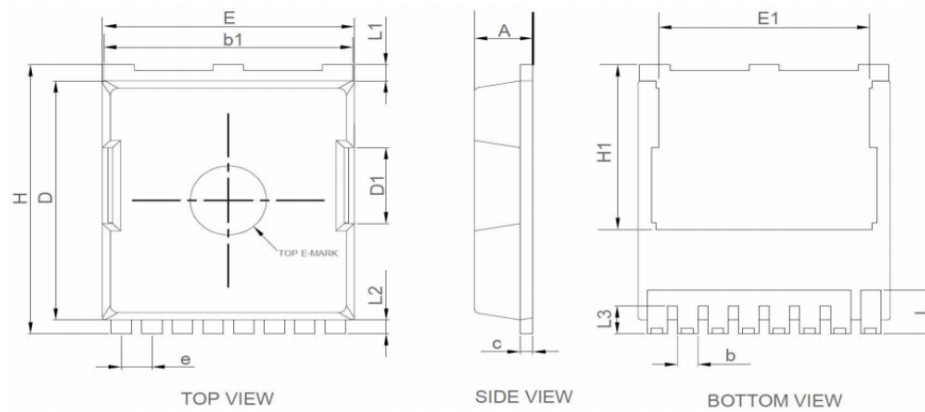


Fig.15 Transient thermal impedance from junction to case



Package Outline: TOLL



Symbol	Dimensions (Unit: mm)		
	Min.	Typ.	Max.
A	2.20	2.30	2.40
b	0.65	0.75	0.85
b1	9.70	9.80	9.90
c	0.40	0.50	0.60
D	10.28	10.38	10.48
D1	3.20	3.30	3.40
E	9.70	9.90	10.10
E1	7.35	---	8.45
e	1.20BSC		
H	11.48	11.68	11.88
H1	6.80	---	7.40
L	1.50	---	2.10
L1	0.50	---	0.90
L2	0.50	0.60	0.70
L3	1.00	---	1.30