

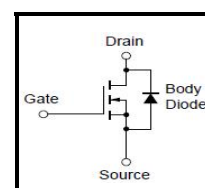
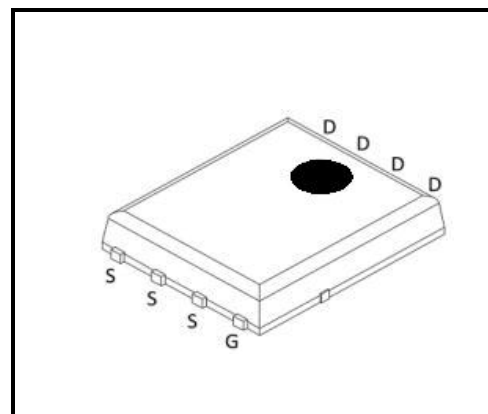
Table1 Ordering Information

Part Number	Package	Marking	Packing
LSD200N0016T	DFN5*6	200N0016T	TBC

Description

SupFET™ is an advanced Silicon MOSFET offering excellent efficiency through low Rds-ON and low gate charge.

SupFET™ is a rugged device with precision charge balance implementation designed for demanding uses such as enterprise power computing power supplies, motor control, lighting and other challenging power conversion applications.



Features

SGT MOSFET
 LOW RDS(ON)
 FAST SWITCHING
 HIGH EAS
 REL TEST SPEC: JESD-22
 HTRB >1000 HRS
 ESD protect

Benefits

LOW CONDUCTION LOSSES
 HIGH EFFICIENCY
 EXCELLENT AVALANCHE
 PERFORMANCE

Table 2 Key Parameters

Parameter	Value	Unit
V _{DSS} @ T _J Min	200	V
R _{DS(on)} Typ	16.0	mΩ
Q _g max	19	nC
I _D @ 25 °C	60	A

Applications

POWER FACTOR CORRECTION
 SERVER POWER SUPPLIES
 TELECOM POWER SUPPLIES
 INVERTERS
 MOTOR CONTROL

Table 3 Maximum Ratings@ T_j = 25 °C, unless otherwise specified

Parameter	Symbol	Values			Unit	Condition
		Min	Typ	Max		
Continuous drain current(T _C = 25°C)	I _D	—	—	60	A	Drain current is limited by maximum junction temperature.
Continuous drain current(T _C = 100°C)		—	—	40	A	
Pulsed drain current(T _C = 25°C)	I _{DM}	—	—	200	A	Package DFN5*6
Avalanche energy, single pulse	E _{AS}	—	—	498	mJ	V _{DD} =100V, V _{GS} =10V, L=0.5mH, Starting T _J =25°C
Gate source voltage (DC)	V _{GS}	-20	—	20	V	
Gate source voltage (AC)	V _{GS}	—	—	—	V	
Power dissipation	P _D	—	—	150	W	DFN5*6, T _C = 25°C
Derating Factor above		—	—	TBC	°C/W	DFN5*6, T _C = 25°C
Storage temperature	T _{stg}	-55	—	150	°C	DFN5*6, T _C = 25°C
Operating junction temperature	T _j	—	—	150	°C	DFN5*6, T _C = 25°C
Maximum diode commutation speed	di/dt	—	—	—	A/μs	V _{DS} =0...30V, I _{SD} ≤I _S , T _j = 25°C

Table 4 Thermal Characteristics

Parameter	Symbol	Values			Unit
		Min	Typ	Max	
Thermal resistance, junction-case*2	R _{thJC}	—	1.0	—	°C/W
Thermal resistance, junction-ambient	R _{thJA}	—	45	—	°C/W
Thermal resistance, junction-ambient for SMD version	R _{thJT}	—	—	—	°C/W
Soldering temperature, wavesoldering only allowed at leads	T _{sold}	—	—	260	°C

Table 5 Electrical Characteristics @ T_j = 25°C, unless otherwise specified

Parameter	Symbol	Values			Unit	Condition
		Min	Typ	Max		
Drain-source breakdown voltage	V _{(BR)DSS}	200	220	—	V	I _D = 1mA, V _{GS} = 0V
Gate threshold voltage	V _{(GS)th}	2.5	3.5	4.5	V	V _{DS} = V _{GS} , I _D = 250μA
Zero gate voltage drain current	I _{DSS}	—	—	1	μA	V _{DS} =200V, T _j =25°C, V _{GS} =0V
Gate-source leakage current	I _{GSS}	—	—	±100	nA	V _{GS} = ±20V, V _{DS} = 0V
Drain-source on-state resistance	R _{DS(on)}	—	16	18	mΩ	V _{GS} = 10V, I _D = 50A, T _j =25°C
	R _{DS(on)}	—	TBD	—	mΩ	V _{GS} = 6V, I _D = 50A, T _j =25°C
Gate resistance	R _G	—	TBC	—	Ω	

Table 6 Dynamic Electrical Characteristics

Parameter	Symbol	Values			Unit	Condition
		Min	Typ	Max		
Input capacitance	C_{iss}	—	1490	—	pF	$V_{DS} = 100V, f = 1MHz, V_{GS} = 0V,$ Level=0.5V
Output capacitance	C_{oss}	—	280	—	pF	
Reverse transfer capacitance	C_{rss}	—	17	—	pF	
Turn-on delay time	$t_{d(on)}$	—	28	—	nS	$V_{DS} = 100V, I_D = 50A,$ $V_{GS} = 10V$ $R_G = 2\Omega, L = 250\mu H$
Rise time	t_r	—	19	—	nS	
Turn-off delay time	$t_{d(off)}$	—	22	—	nS	
Fall time	t_f	—	14	—	nS	

Table 7 Gate Charge Characteristics

Parameter	Symbol	Values			Unit	Condition
		Min	Typ	Max		
Forward Transconductance	g_{fs}	—	40	—	S	$V_{DS} = 5V, I_D = 50A$
Gate to source charge	Q_g	—	19	—	nC	$V_{DS} = 100V, I_D = 50A,$ $V_{GS} = 10V, L = 250\mu H$
Gate to drain charge	Q_{gs}	—	10	—	nC	
Gate charge total	Q_{gd}	—	5	—	nC	
Gate plateau voltage	$V_{plateau}$	—	—	—	V	

Table 8 Diode Characteristics

Parameter	Symbol	Values			Unit	Condition
		Min	Typ	Max		
Diode forward voltage	V_{SD}	—	0.9	—	V	$I_S = 30A, V_{GS} = 10V$
Reverse recovery time	t_{rr}	—	192	—	nS	$di/dt = 100A/\mu s$
Reverse recovery charge	Q_{rr}	—	390	—	μC	$L\sigma = 50nH, C\sigma = 10pF$

Table 9 Typical Electrical Characteristics

Fig1. Output characteristics

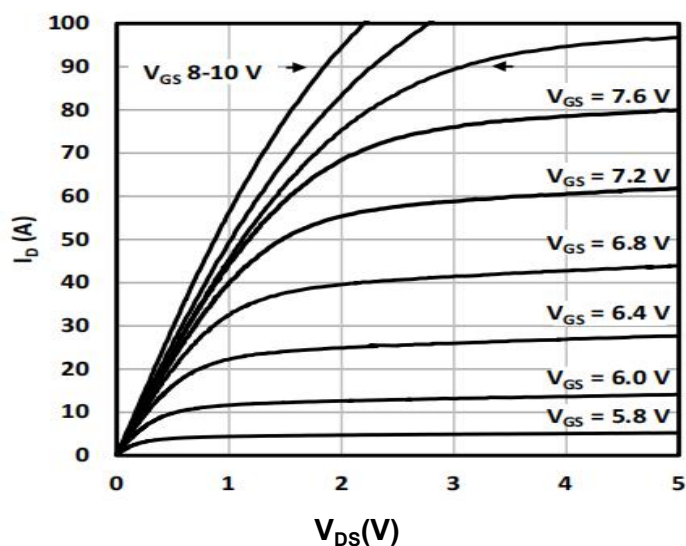


Fig.2 Transfer characteristics

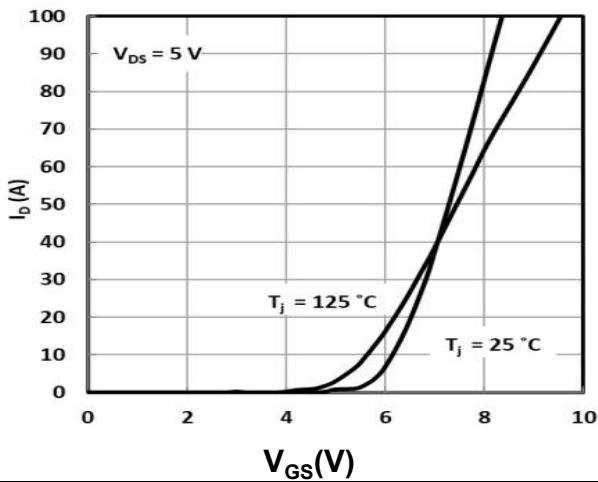


Fig.3 On-resistance vs. gate voltage

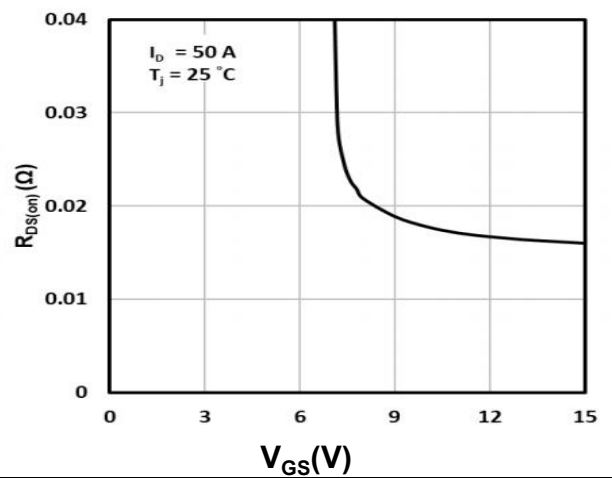


Fig.4 On-Resistance vs. drain current

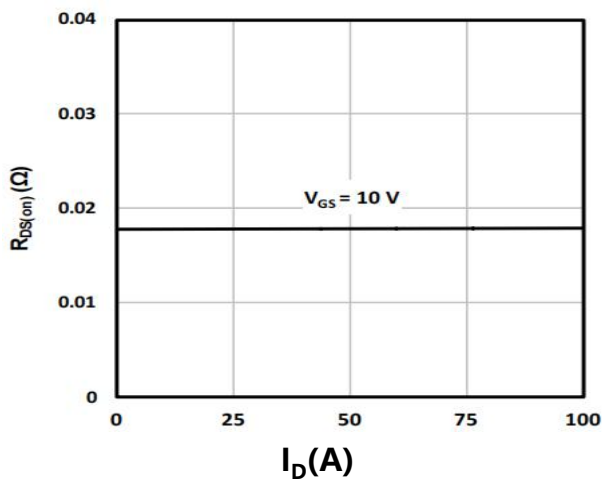


Fig.5 Source-to-drain diode forward characteristics

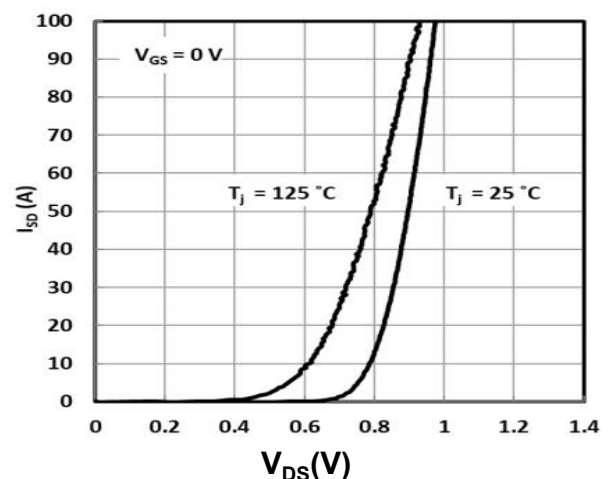


Fig.6 Gate-to-source voltage vs. gate charge

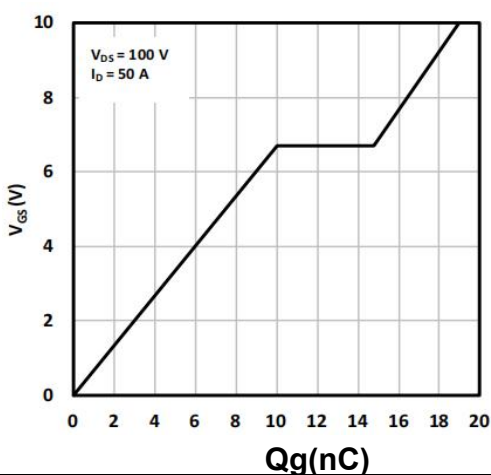


Fig. 7 Capacitance vs. drain-to-source voltage

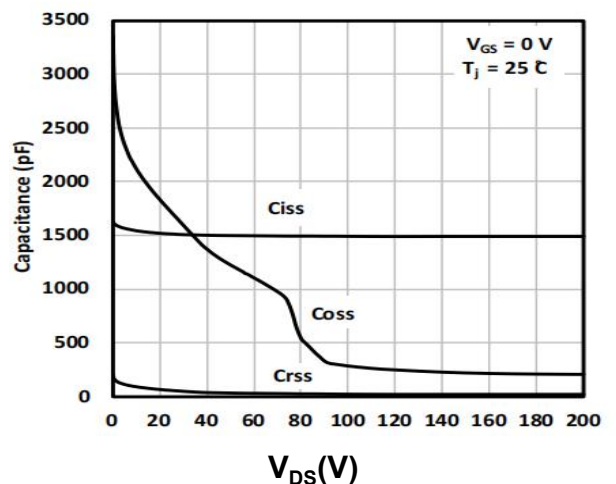


Fig.8 Safe Operation Area

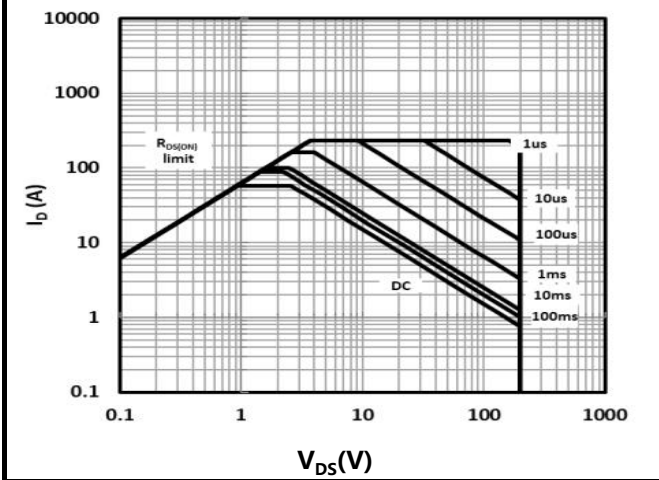


Fig.9 Junction-to-case thermal impedance

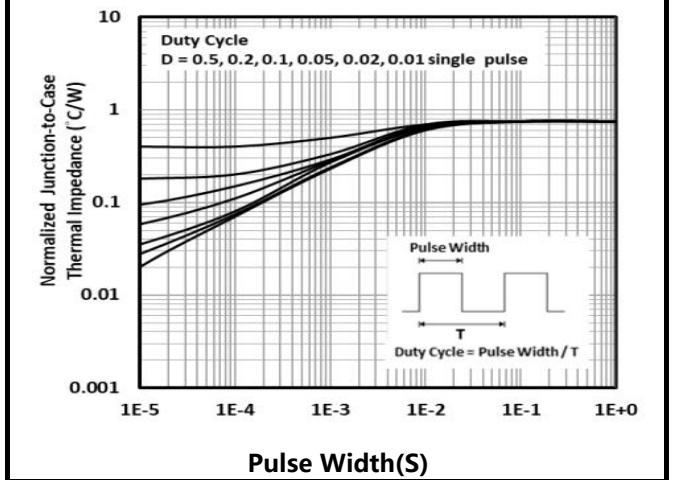
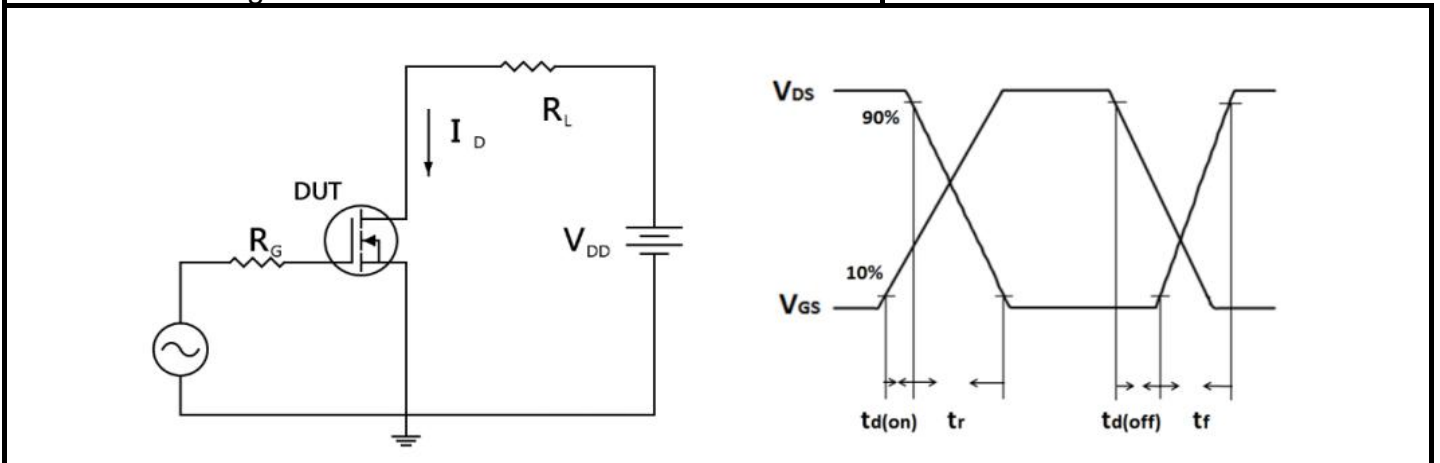
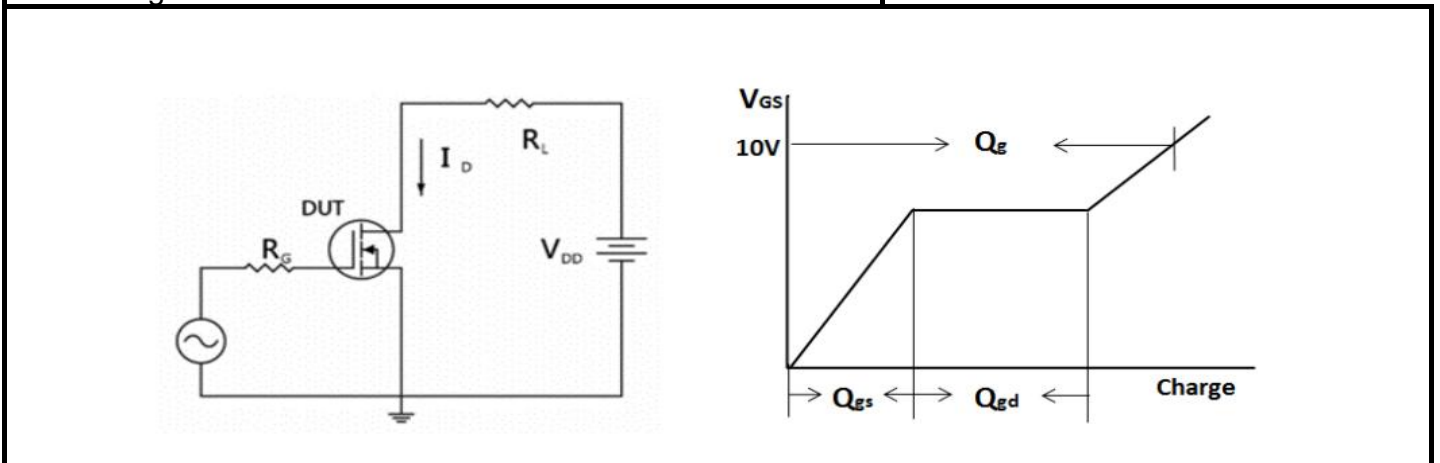


Table 10 Test Circuits and Waveforms

Resistive switching time test circuit & waveforms



Gate charge test circuit & waveform



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