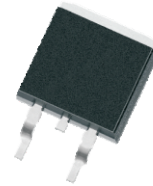
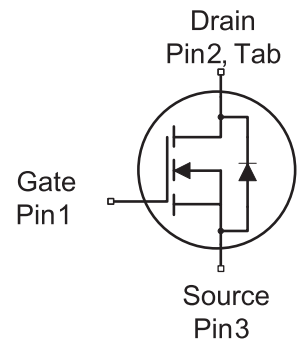


Features

- Uses advanced SGTtechnology
- Extremely low $R_{DS(on)}$ _{typ}=4.4mΩ@V_{gs}=10V
- Excellent gate charge x RDS(on)product(FOM)

Application

- Motor control anddrives
- Battery management
- DC/DCconverter
- General purposeapplications



RoHS
COMPLIANT

ProductSummary

V _{DS}	85V
R _{DS(on)} @VGS=10V	4.4mΩ
I _D	120A

MaximumRatings

Parameter	Symbol	Value	Unit
Drain-sourcevoltage	V _{DS}	85	V
Continuous draincurrent T _C = 25°C (Siliconlimit)	I _D	140	A
T _C = 25°C (Packagelimit)		120	
T _C = 100°C (Siliconlimit)		100	
Pulsed draincurrent T _C = 25°C, t _p limited byT _{jm} ax	I _{Dpulse}	480	
Avalanche energy, single pulse(L=0.5mH,Rg=25Ω)	E _{AS}	680	mJ
Gate-emittervoltage	V _{GS}	±20	V
Powerdissipation T _C =25°C	P _{tot}	220	W
Operating junction and storagetemperature	T _j , T _{stg}	-55~175	°C

ThermalResistance

Parameter	Symbol	Value	Unit
Thermal resistance, junction – case.Max	R_{thJC}	0.70	°C/W
Thermal resistance, junction – ambient.Max	R_{thJA}	60	

Electrical Characteristic, at Tj = 25 °C, unless otherwise specified

Parameter	Symbol	TestCondition	Value			Unit
			min.	typ.	max.	

StaticCharacteristic

Drain-sourcebreakdown voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	85	95	-	V
Gate thresholdvoltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$ $T_j=25^\circ C$ $T_j=125^\circ C$	2.0 -	3	4.0 -	
Zerogatevoltage draincurrent	I_{DSS}	$V_{DS}=85V, V_{GS}=0V$ $T_j=25^\circ C$ $T_j=125^\circ C$	- -	- 5	1 -	μA
Gate-source leakagecurrent	I_{GSS}	$V_{GS}=20V, V_{DS}=0V$	-	-	100	nA
Drain-sourceon-state resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=50A,$ $T_j=25^\circ C$	-	4.4	5.0	m Ω
Transconductance	g_{fs}	$V_{DS}=5V, I_D=50A$	-	80	-	S

DynamicCharacteristic

InputCapacitance	C_{iss}	$V_{GS}=0V, V_{DS}=40V,$ $f=1MHz$	-	4032	-	pF
OutputCapacitance	C_{oss}		-	637	-	
Reverse TransferCapacitance	C_{rssi}		-	17	-	
Gate TotalCharge	Q_G	$V_{GS}=10V, V_{DS}=40V,$ $I_D=25A, f=1MHz$	-	65.7	-	nC
Gate-Sourcecharge	Q_{gs}		-	24.9	-	
Gate-Draincharge	Q_{gd}		-	13.9	-	
Turn-on delaytime	$t_{d(on)}$	$T_j=25^\circ C, V_{GS}=10V,$ $V_{DS}=40V, R_L=3\Omega$	-	20.1	-	ns
Risetime	t_r		-	38	-	
Turn-off delaytime	$t_{d(off)}$		-	45.1	-	
Falltime	t_f		-	21	-	
Gate resistance	R_G	$V_{GS}=0V, V_{DS}=0V,$ $f=1MHz$	-	1.6	-	Ω

Body DiodeCharacteristic

Body Diode ForwardVoltage	V_{SD}	$V_{GS}=0V, I_{SD}=50A$	-	0.85	1.4	V
Body Diode ReverseRecovery Time	t_{rr}	$I_F=20A,$ $dI/dt=500A/\mu s$	-	61	-	ns
Body Diode ReverseRecovery Charge	Q_{rr}	$I_F=20A,$ $dI/dt=500A/\mu s$	-	340	-	nC

Typical Performance Characteristics

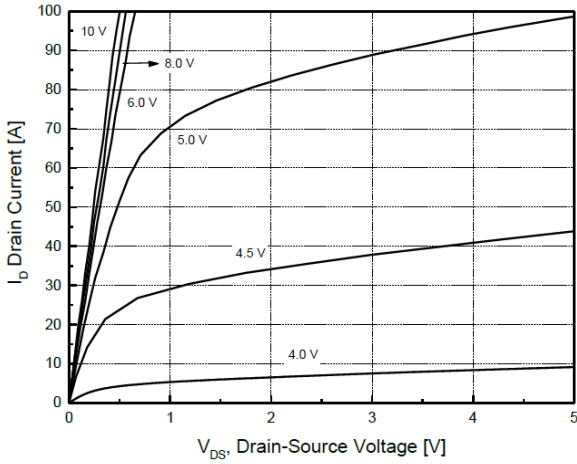


Figure 1. Typ. Output Characteristics (Tj=25°C)

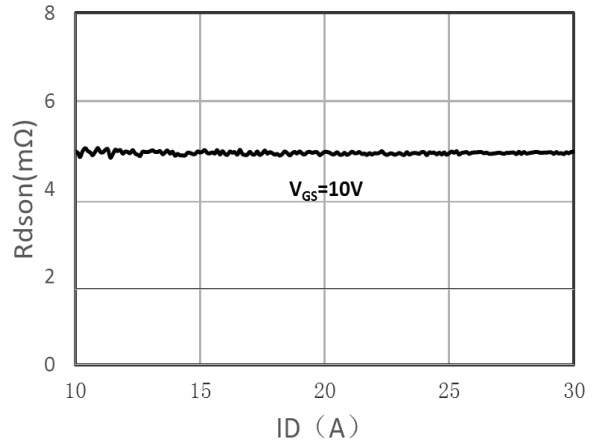


Figure 2. Rds(on) vs Drain Current and Gate Voltage

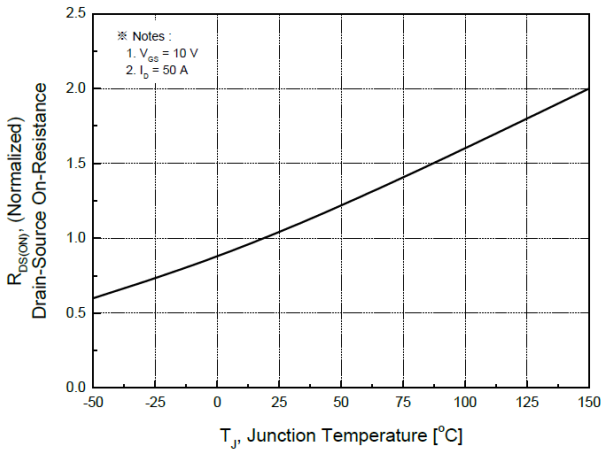


Figure 3. On-Resistance Variation with Temperature

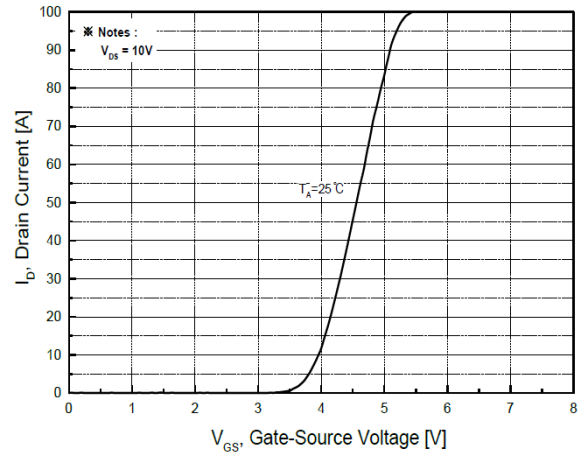


Figure 4. Transfer Characteristics

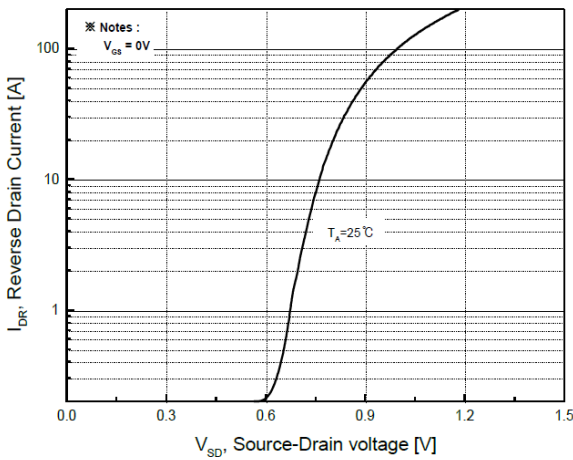


Figure 5. Body Diode Forward Voltage Variation with Source Current and Temperature

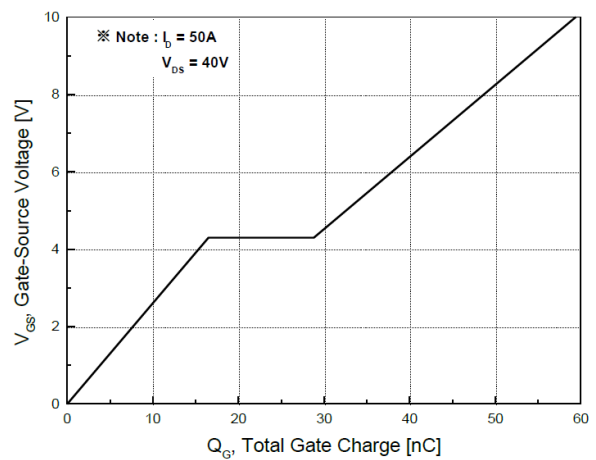


Figure 6 Gate Charge Characteristics

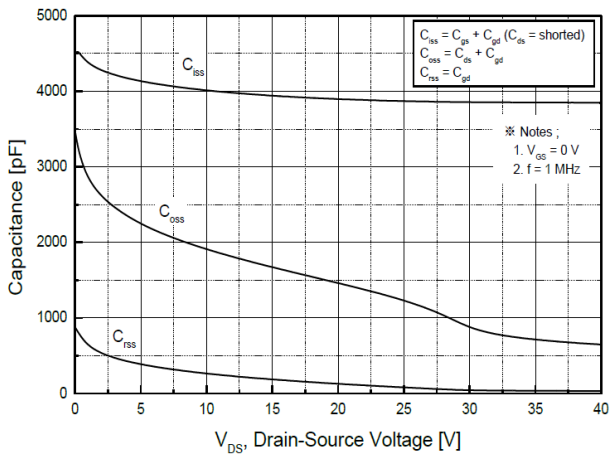


Figure 7. Capacitance Characteristics

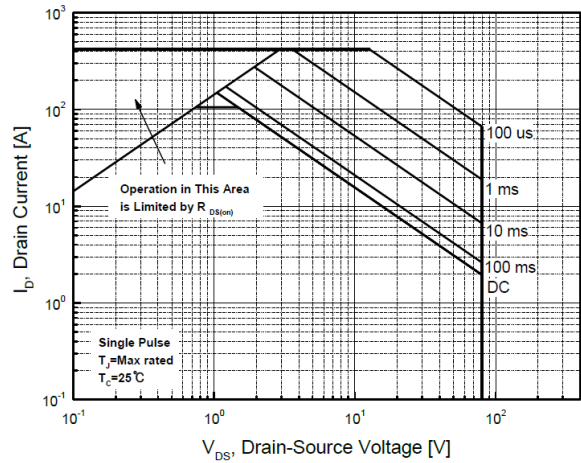


Figure 8. Maximum Safe Operating Area

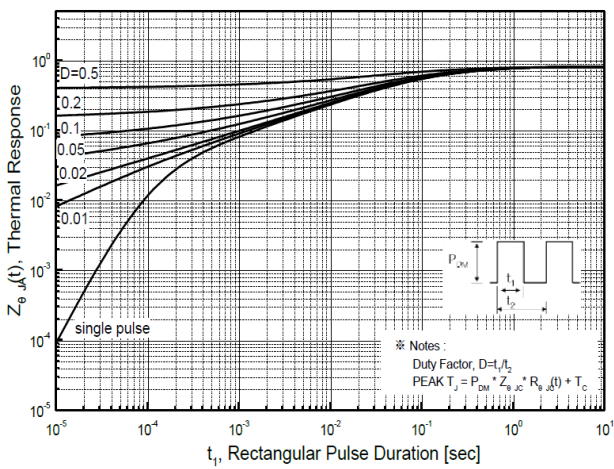
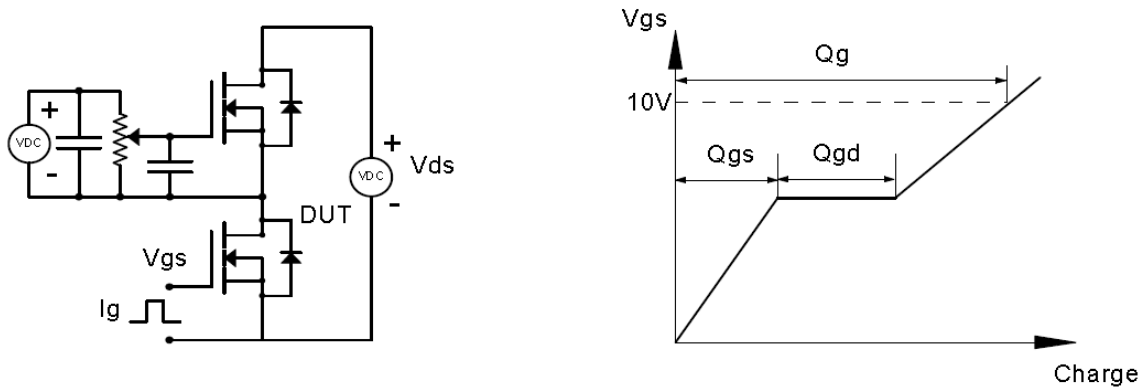


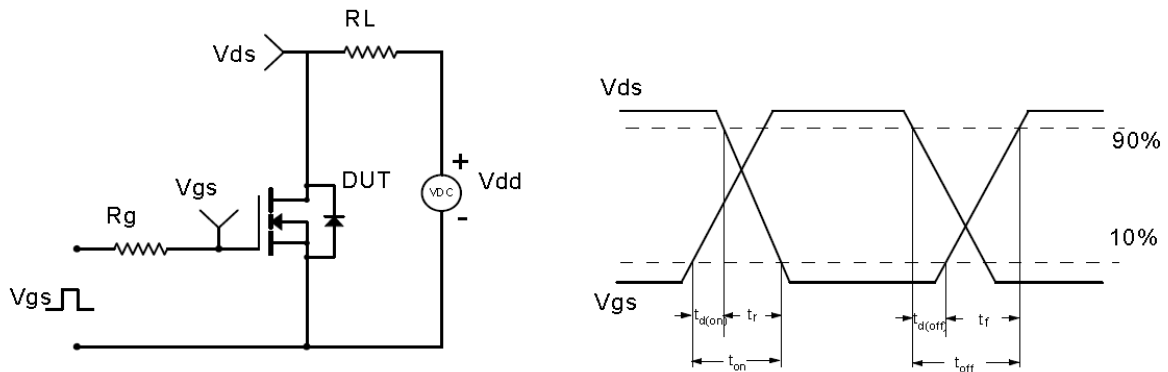
Figure 9: Transient Thermal Response Curve

Test Circuit & Waveform

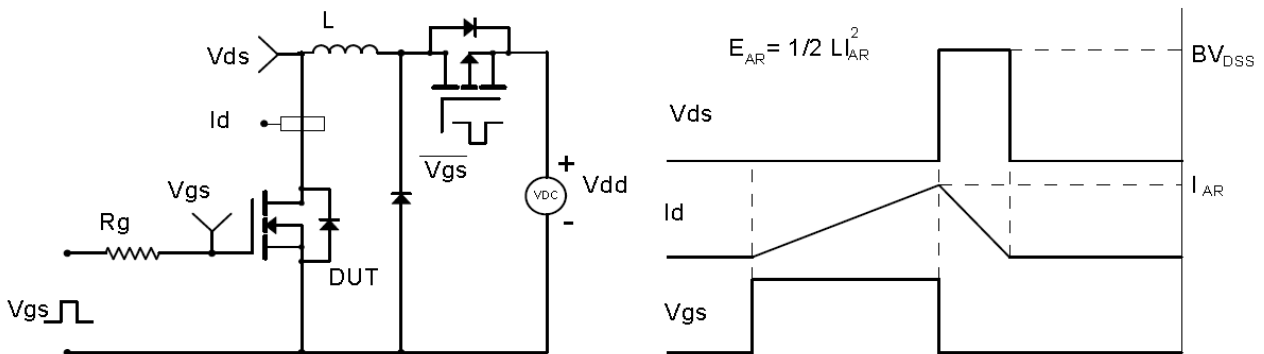
Gate Charge Test Circuit & Waveform



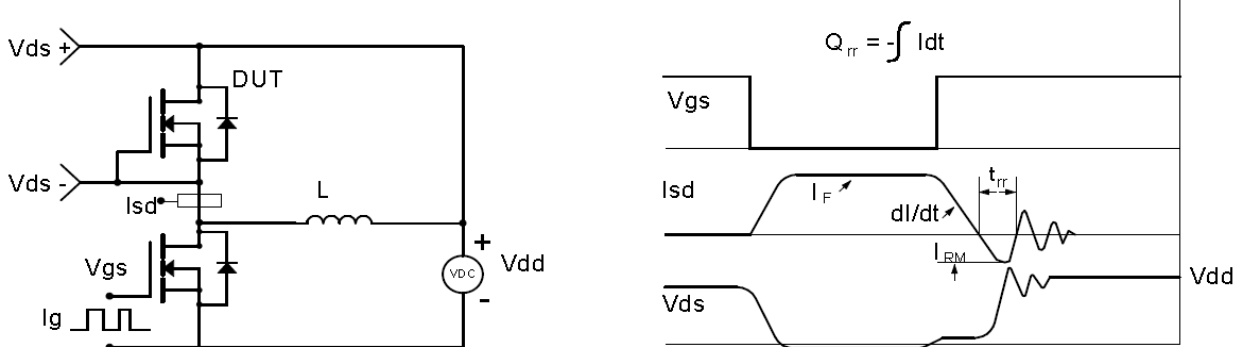
Resistive Switching Test Circuit & Waveforms



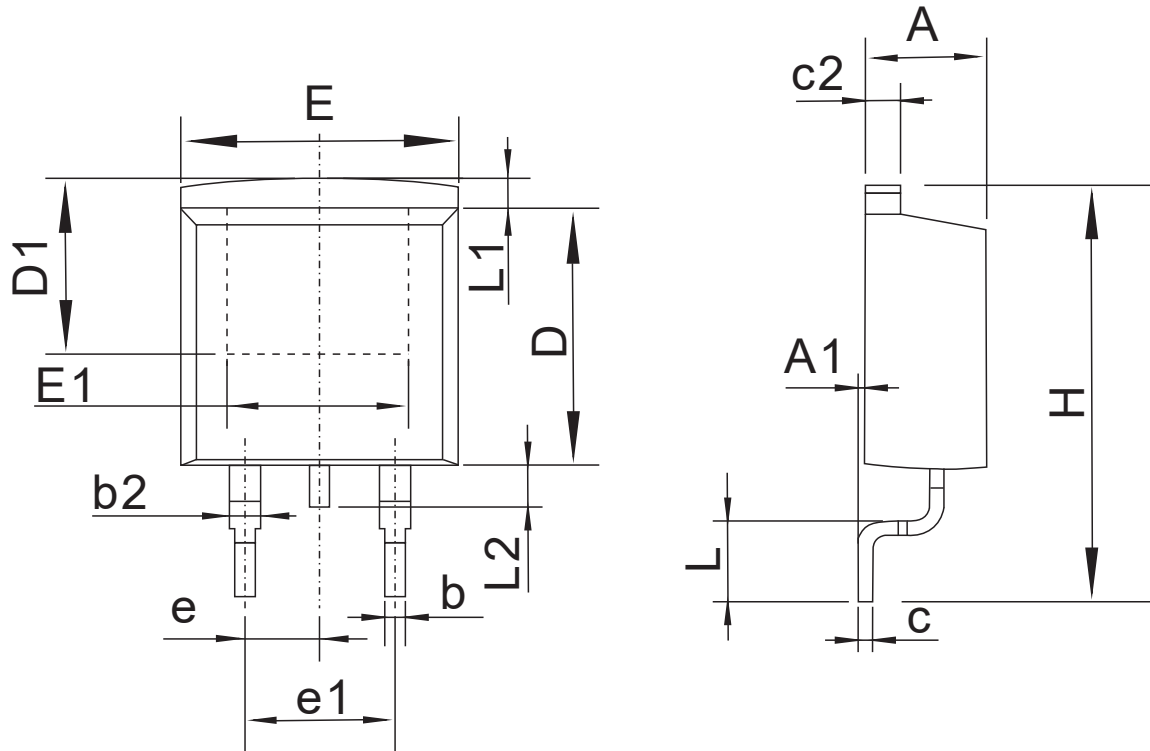
Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



Package Outlines



Dimension	Millimeters	
	Min.	Max.
A	4.30	4.57
A1	0.00	0.25
b	0.65	0.85
b2	0.95	1.15
c	0.33	0.65
c2	1.17	1.40
D	8.51	9.45
D1	7.10	7.90
E	9.80	10.31
E1	6.50	8.60
e	2.54 (BSC)	
e1	5.08(BSC)	
H	14.61	15.88
L	2.29	3.00
L1	0.70	1.60
L2	1.00	1.78

Figure 1 Outline PG-TO263, dimensions in mm

Revision history

Date	Revision	Changes
28-May-2020	1.0	Initial release

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