

Absolute Maximum Ratings at $T_j=25$ unless otherwise noted

Parameter	Symbol	Value	Unit
Drain-source voltage	V_{DS}	700	V
Gate-source voltage	V_{GS}	± 30	V
Continuous drain current ¹⁾ , $T_C=25$ °C	I_D	8	A
Continuous drain current ¹⁾ , $T_C=100$ °C		4.5	
Pulsed drain current ²⁾ , $T_C=25$ °C	$I_{D, pulse}$	24	A
Continuous diode forward current ¹⁾ , $T_C=25$ °C	I_S	8	A
Diode pulsed current ²⁾ , $T_C=25$ °C	$I_{S, pulse}$	24	A
Power dissipation ³⁾ , $T_C=25$ °C	P_D	65	W
Single pulsed avalanche energy ⁵⁾	E_{AS}	129	mJ
MOSFET dv/dt ruggedness, V_{DS}	dv/dt	50	V/ns
Reverse diode dv/dt, V_{DS}	dv/dt	15	V/ns
Operation and storage temperature	T_{stg}, T_j	-55 to 150	°C

Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal resistance, junction-case	R	1.92	°C/W
Thermal resistance, junction-ambient ⁴⁾	R	62	°C/W

Electrical Characteristics at $T_j=25$ unless otherwise specified

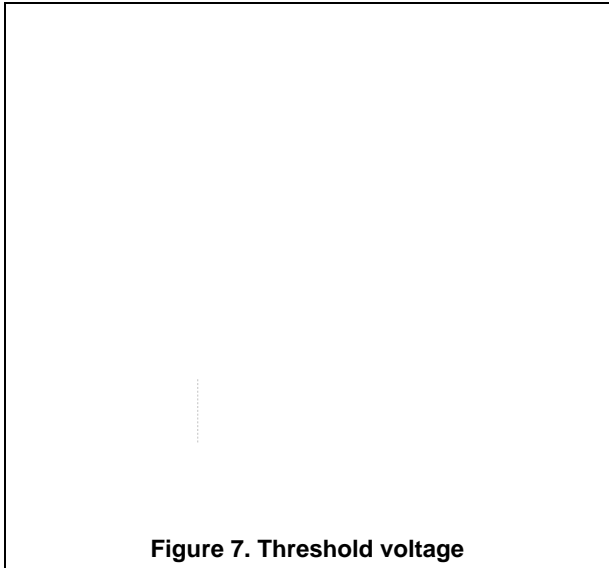

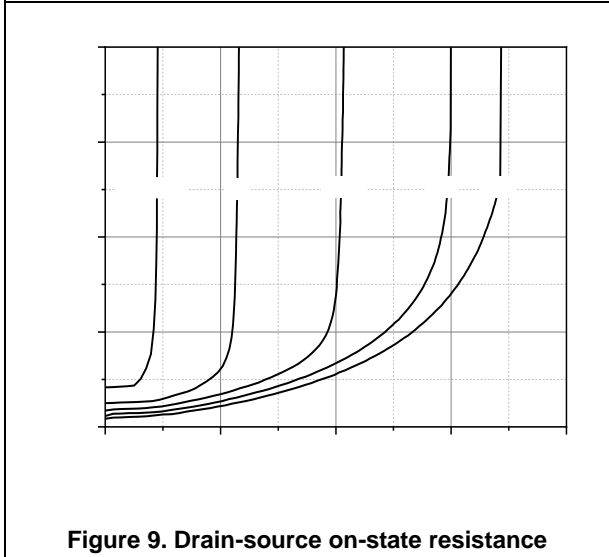
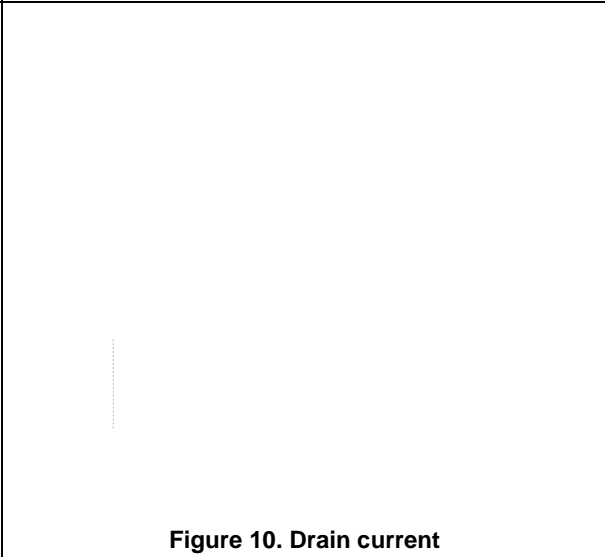
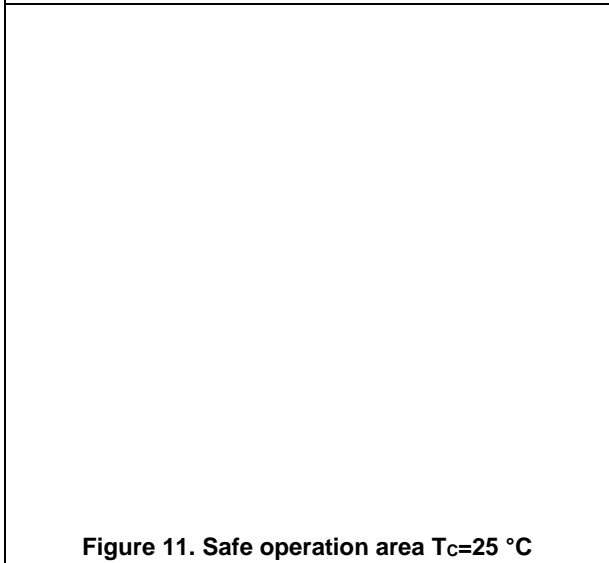
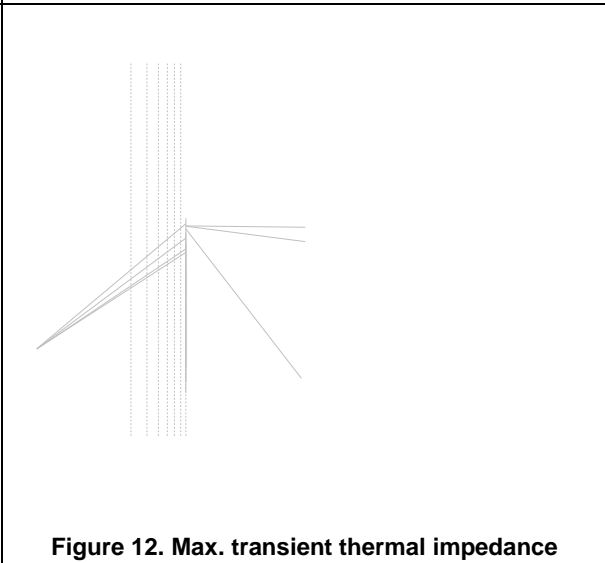
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Drain-source breakdown voltage	BV_{DSS}	700			V	$V_{GS}=0$ V, $I_D=250$ A
		750				$V_{GS}=0$ V, I_D , $T_j=150$ °C
Gate threshold voltage	$V_{GS(th)}$	2.9		3.9	V	$V_{DS}=V_{GS}$, $I_D=250$ A
Drain-source on-state resistance	$R_{DS(ON)}$		0.54	0.6		$V_{GS}=10$ V, $I_D=4$ A
			1.34			$V_{GS}=10$ V, $I_D=4$ A, $T_j=150$ °C
Gate-source leakage current	I_{GSS}			100	nA	$V_{GS}=30$ V
				-100		$V_{GS}=-30$ V
Drain-source leakage current	I_{DSS}			1	A	$V_{DS}=700$ V, $V_{GS}=0$ V
Gate resistance	R_G		10.3			=1 MHz, Open drain

Dynamic Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Input capacitance	C_{iss}		569		pF	$V_{GS}=0\text{ V}$, $V_{DS}=50\text{ V}$, 00 kHz
Output capacitance	C_{oss}		39		pF	
Reverse transfer capacitance	C_{rss}		2.3		pF	
Turn-on delay time	$t_{d(on)}$		20.9		ns	$V_{GS}=10\text{ V}$, $V_{DS}=400\text{ V}$, $R_G=2\text{ }\mu\text{s}$ $I_D=4\text{ A}$
Rise time	t_r		7.6		ns	
Turn-off delay time	$t_{d(off)}$					

Electrical Characteristics Diagrams

<p>Figure 1. Typ. output characteristics</p>	<p>Figure 2. Typ. transfer characteristics</p>
<p>Figure 3. Typ. capacitances</p>	<p>Figure 4. Typ. gate charge</p>
<p>Figure 5. Drain-source breakdown voltage</p>	<p>Figure 6. Drain-source on-state resistance</p>

 <p>Figure 7. Threshold voltage</p>	 <p>Figure 8. Forward characteristic of body diode</p>
 <p>Figure 9. Drain-source on-state resistance</p>	 <p>Figure 10. Drain current</p>
 <p>Figure 11. Safe operation area $T_c=25\text{ }^\circ\text{C}$</p>	 <p>Figure 12. Max. transient thermal impedance</p>

Test circuits and waveforms

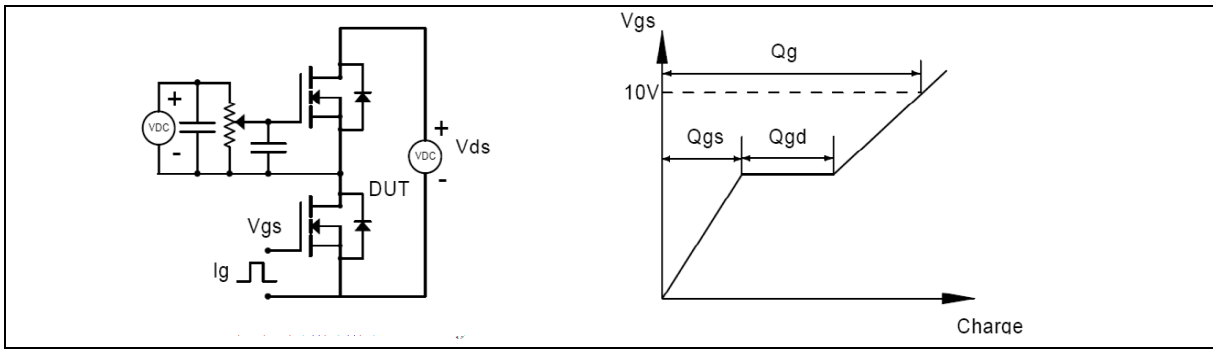


Figure 1. Gate charge test circuit & waveform



Figure 2. Switching time test circuit & waveforms

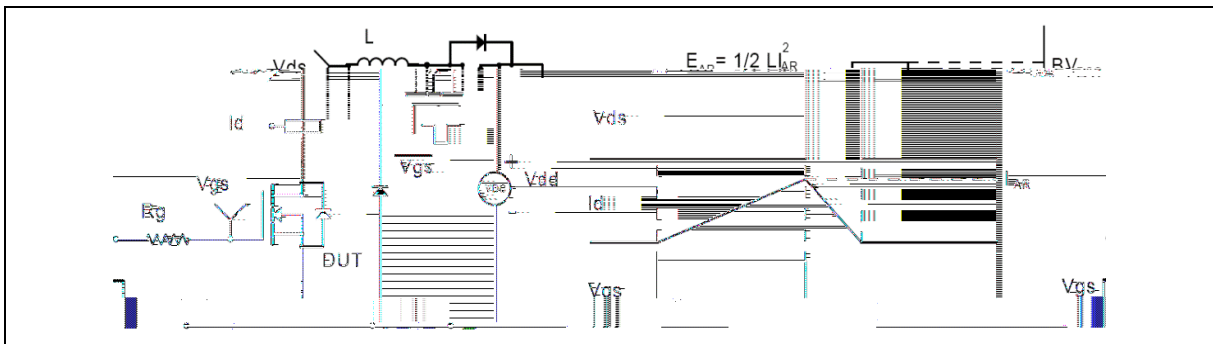
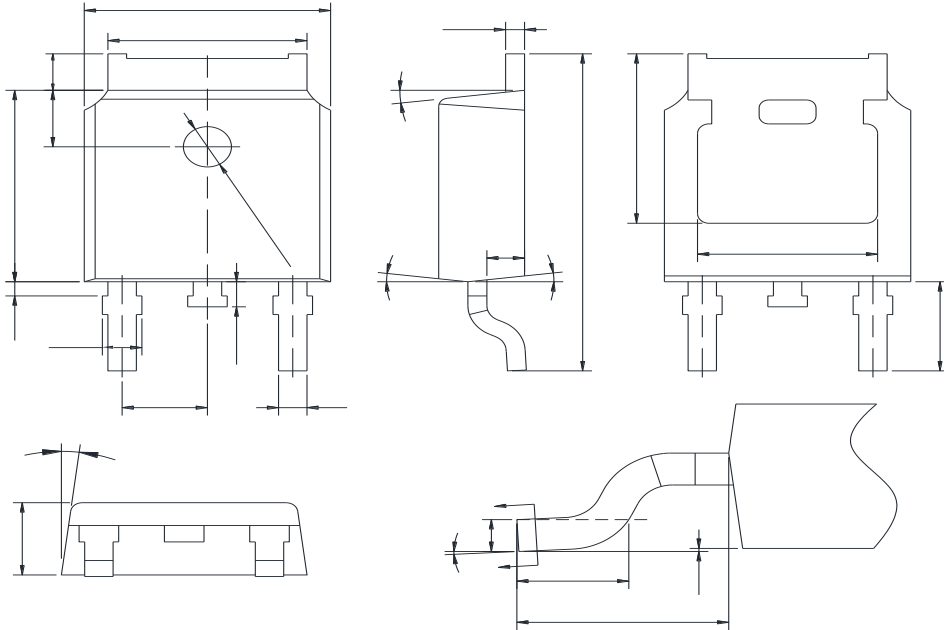


Figure 3. Unclamped inductive switching (UIS) test circuit & waveforms



Figure 4. Diode reverse recovery test circuit & waveforms

Package Information



Symbol	mm		
	Min	Nom	Max
A	2.20	2.30	2.38
A1	0.00	-	0.10
A2	0.90	1.01	1.10
b	0.72	-	0.85
b1	0.71	0.76	0.81
b2	0.72	-	0.90
b3	5.13	5.33	5.46
c	0.47	-	0.60
c1	0.46	0.51	0.56
c2	0.47	-	0.60
D	6.00	6.10	6.20
D1	5.25	-	-
E	6.50	6.60	6.70
E1	4.70	-	-
e	2.186	2.286	2.386
H	9.80	10.10	10.40
L	1.40	1.50	1.70
L1	2.90REF		
L2	0.508BSC		
L3	0.90	-	1.25
L4	0.60	0.80	1.00
L5	0.15	-	0.75
L6	1.80REF		
	0	-	

Version 1: TO252-J package outline dimension

Ordering Information

Package Type	Units/ Reel	Reels/ Inner Box	Units/ Inner Box	Inner Boxes/ Carton Box	Units/ Carton Box
TO252-J	2500	2	5000	5	25000

Product Information

Product	Package	Pb Free	RoHS	Halogen Free
OSG70R600DSF	TO252	yes	yes	yes