Absolute Maximum Ratings at T_j=25 unless otherwise noted

Parameter	Symbol	Value	Unit
Drain-source voltage	V_{DS}	650	V
Gate-source voltage	V_{GS}	±30	V
Continuous drain current[1], T_C=25 ℃	I_D	18	A
Continuous drain current[1], T_C=100 ℃		11.5	
Pulsed drain current[2], T_C=25 ℃	$I_{D,\ pulse}$	54	A
Continuous diode forward current[1], T_C=25 ℃	I_S	18	A
Diode pulsed current[2], T_C=25 ℃	$I_{S,\ pulse}$	54	A
Power dissipation[3] ,T_C=25 ℃	P_D	151	W
Single pulsed avalanche energy[5]	E_{AS}	272	mJ
MOSFET dv/dt ruggedness, V_{DS}	dv/dt	100	V/ns
Reverse diode dv/dt, V_{DS} SD D	dv/dt	50	V/ns
Operation and storage temperature	T_{stg}, T_j	-55 to 150	℃

Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal resistance, junction-case	R	0.82	℃/W
Thermal resistance, junction-ambient[4]	R	62	℃/W

Electrical Characteristics at T_j=25 unless otherwise specified

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Drain-source breakdown voltage	BV_{DSS}	650			V	V_{GS}=0 V, I_D=250 uA
		700	770			V_{GS}=0 V, I_D=250 uA, T_j=150 ℃
Gate threshold voltage	$V_{GS(th)}$	3.0		4.5	V	V_{DS}=V_{GS}, I_D=250 uA
Drain-source on-state resistance	$R_{DS(ON)}$		0.18	0.22		V_{GS}=10 V, I_D=9 A
			0.45			V_{GS}=10 V, I_D=9 A, T_j=150 ℃
Gate-source leakage current	I_{GSS}			100	nA	V_{GS}=30 V
				-100		V_{GS}=-30 V
Drain-source leakage current	I_{DSS}			10	A	V_{DS}=650 V, V_{GS}=0 V

Dynamic Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Input capacitance	C_{iss}		1493		pF	V_{GS}=0 V, V_{DS}=50 V, MHz
Output capacitance	C_{oss}		101		pF	
Reverse transfer capacitance	C_{rss}		2.05		pF	
Turn-on delay time	$t_{d(on)}$		45.28		ns	V_{GS}=10 V, V_{DS}=400 V, R_G=20 I_D=18 A
Rise time	t_r		82.64		ns	
Turn-off delay time	$t_{d(off)}$		42.20		ns	
Fall time	t_f		32.56		ns	

Gate Charge Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Total gate charge	Q_g		21.7		nC	V_{GS}=10 V, V_{DS}=400 V, I_D=18 A
Gate-source charge	Q_{gs}		8.04		nC	
Gate-drain charge	Q_{gd}		7.4		nC	
Gate plateau voltage	$V_{plateau}$		7.2		V	

Body Diode Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Diode forward voltage	V_{SD}			1.2	V	I_S=18 A, V_{GS}=0 V
Reverse recovery time	t_{rr}		143.3		ns	I_S=18 A, di/dt=100
Reverse recovery charge	Q_{rr}		767		nC	
Peak reverse recovery current	I_{rrm}		10.7		A	

Note

1) Calculated continuous current based on maximum allowable junction temperature.
2) Repetitive rating; pulse width limited by max. junction temperature.
3) Pd is based on max. junction temperature, using junction-case thermal resistance.
4) The value of R is measured with the device mounted on 1 in 2 FR-4 board with 2oz. Copper, in a still air environment with T_a=25 ℃.
5) V_{DD}=100 V, V_{GS}=10 V, L=10 mH, starting T_j=25 ℃.

Electrical Characteristics Diagrams

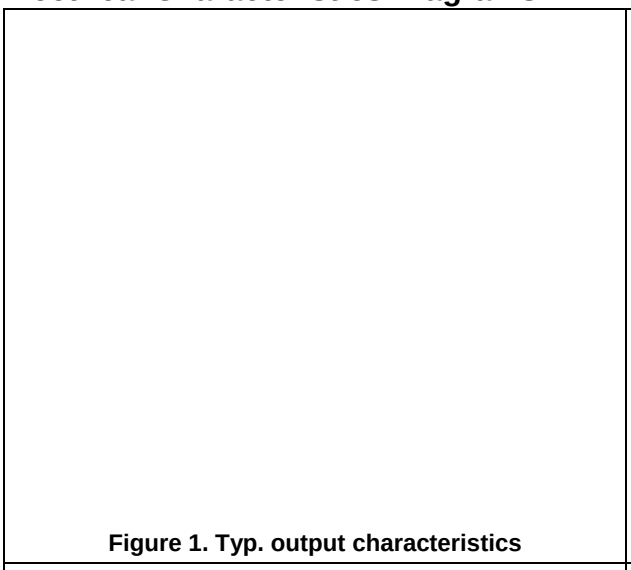


Figure 1. Typ. output characteristics

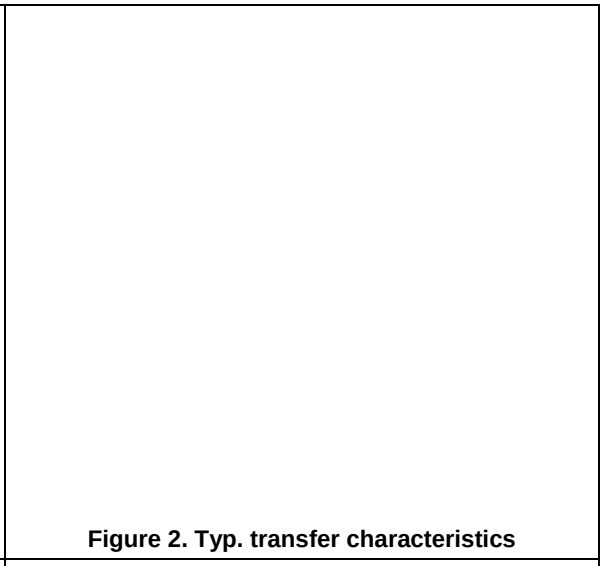


Figure 2. Typ. transfer characteristics

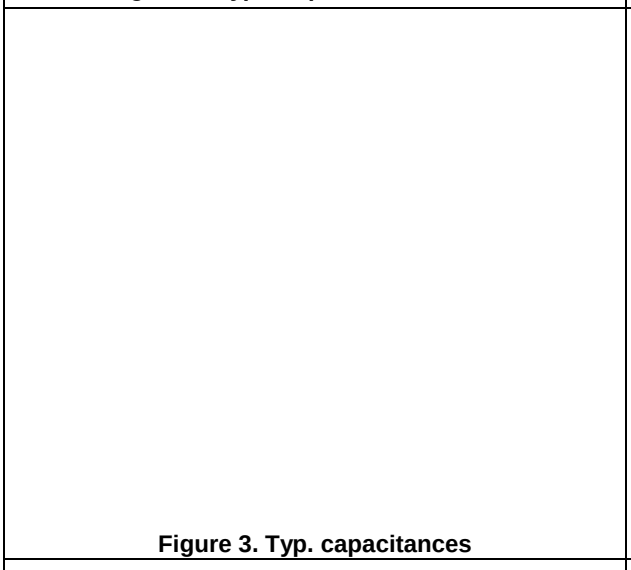


Figure 3. Typ. capacitances

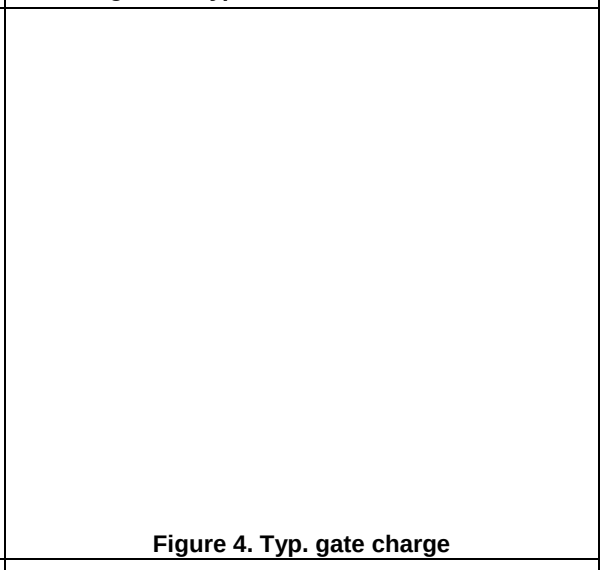


Figure 4. Typ. gate charge

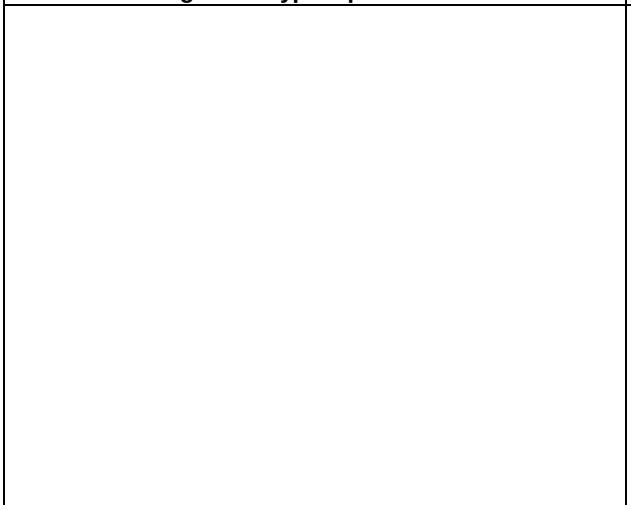


Figure 5. Drain-source breakdown voltage

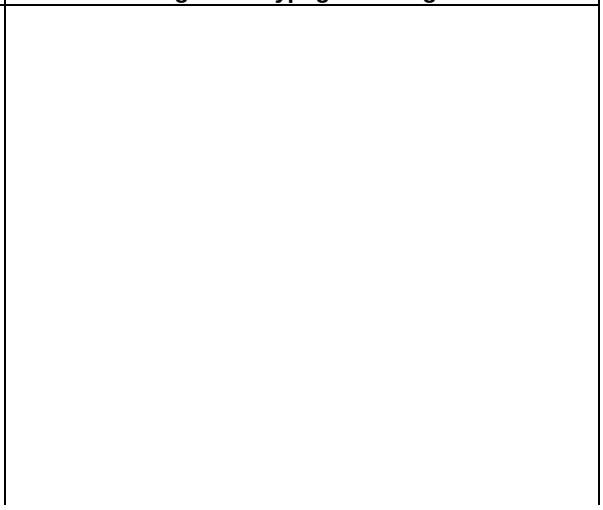


Figure 6. Drain-source on-state resistance

Figure 7. Forward characteristic of body diode

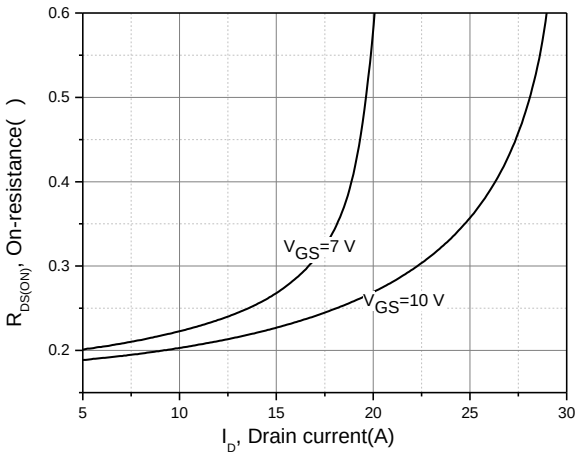


Figure 8. Drain-source on-state resistance

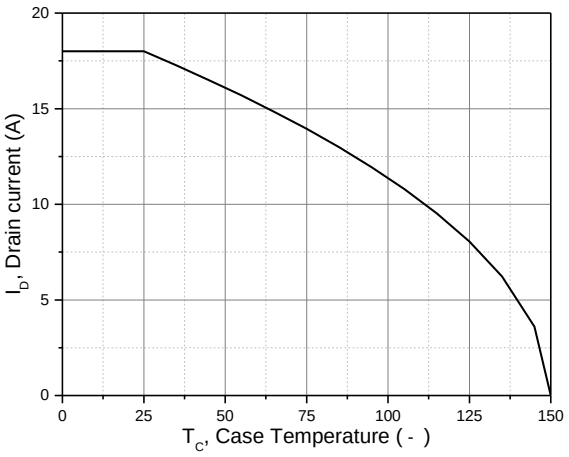
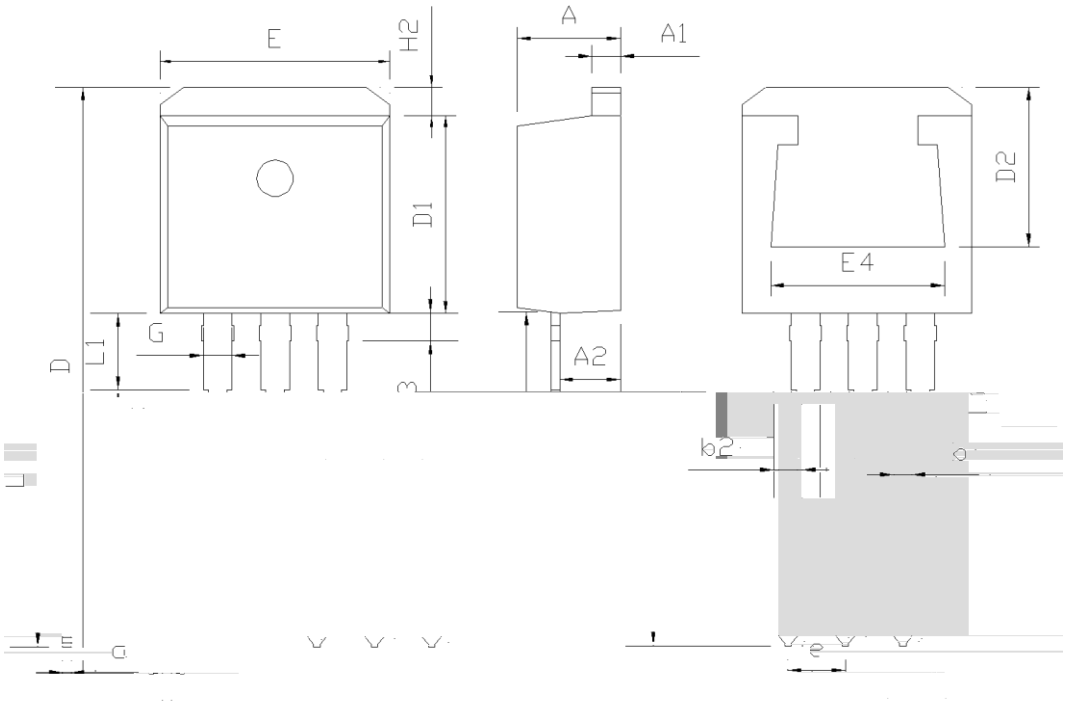


Figure 9. Drain current

Figure 10. Safe operation area T_C=25 °C

Package Information



Symbol	mm		
	Min	Nom	Max
A	4.34	4.57	4.77
A1	1.22	1.27	1.42
A2	2.49	2.69	2.89
b	0.71	0.81	0.96
b2	1.17	1.27	1.42
c	0.28	0.38	0.53
D	23.20	23.70	24.02
D1	8.50	8.70	8.90
D2	6.00	-	-
E	9.86	10.16	10.36
E4	7.06	-	-
e	2.54 BSC		
H2	-	-	1.50
L	13.33	13.73	14.13
L1	3.50	3.75	4.00
L3	1.28	1.43	1.58
G	1.25	1.35	1.50

Version1: TO262-C package outline dimension

Ordering Information

Package Type	Units/ Tube	Tubes/ Inner Box	Units/ Inner Box	Inner Boxes/ Carton Box	Units/ Carton Box
TO262-C	50	20	1000	6	6000

Product Information

Product	Package	Pb Free	RoHS	Halogen Free
OSG65R220IZF	TO262	yes	yes	yes

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