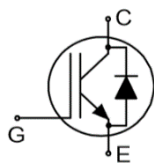


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Parameter	Value	Unit
$V_{CES, \min}$ @ 25 °C	650	V
Maximum junction temperature	175	°C
I_C , pulse	300	A
$V_{CE(sat)}$, typ @ $V_{GE}=15$ V	1.65	V
Q_g	175	nC

Product Name	Package	Marking
OST75N65HZF	TO247	OST75N65HZ



Absolute Maximum Ratings at $T_{vj}=25$ unless otherwise noted

Parameter	Symbol	Value	Unit
Collector emitter voltage	V_{CES}	650	V
Gate emitter voltage	V_{GES}	± 20	V
Transient gate emitter voltage, $T_P \quad \mu s, D < 0.01$		± 30	V
Continuous collector current ¹⁾ , $T_C=25 \text{ }^\circ\text{C}$	I_C	90	A
Continuous collector current ¹⁾ , $T_C=100 \text{ }^\circ\text{C}$		75	A
Pulsed collector current ²⁾ , $T_C=25 \text{ }^\circ\text{C}$	$I_{C, pulse}$	300	A
Diode forward current ¹⁾ , $T_C=25 \text{ }^\circ\text{C}$	I_F	90	A
Diode forward current ¹⁾ , $T_C=100 \text{ }^\circ\text{C}$		75	A
Diode pulsed current ²⁾ , $T_C=25 \text{ }^\circ\text{C}$	$I_{F, pulse}$	300	A
Power dissipation ³⁾ , $T_C=25 \text{ }^\circ\text{C}$	P_D	395	W
Power dissipation ³⁾ , $T_C=100 \text{ }^\circ\text{C}$		198	W
Operation and storage temperature	T_{stg}, T_{vj}	-55 to 175	$^\circ\text{C}$
Short circuit withstand time $V_{GE}=15 \text{ V}, V_{CC} 400 \text{ V}$ Allowed number of short circuits < 1000 Time between short circuits: 1.0 S $T_{vj}=150 \text{ }^\circ\text{C}$	t_{sc}	10	s

Thermal Characteristics

Parameter	Symbol	Value	Unit
IGBT thermal resistance, junction-case	R	0.38	$^\circ\text{C/W}$
Diode thermal resistance, junction-case	R	0.45	$^\circ\text{C/W}$
Thermal resistance, junction-ambient ⁴⁾	R	40	$^\circ\text{C/W}$

Electrical Characteristics at $T_{vj}=25$ unless otherwise specified

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Collector-emitter breakdown voltage	$V_{(BR)CES}$	650			V	$V_{GE}=0$ V, $I_C=0.5$ mA
Collector-emitter saturation voltage	$V_{CE(sat)}$		1.65	2.1	V	$V_{GE}=15$ V, $I_C=75$ A $T_{vj}=25$ °C
			1.85		V	$V_{GE}=15$ V, $I_C=75$ A, $T_{vj}=125$ °C
			1.95			$V_{GE}=15$ V, $I_C=75$ A, $T_{vj}=175$ °C
Gate-emitter threshold voltage	$V_{GE(th)}$	4.0	5.0	6.0	V	$V_{CE}=V_{GE}$, $I_D=0.5$ mA
Diode forward voltage	V_F		1.45	1.65	V	$V_{GE}=0$ V, $I_F=75$ A $T_{vj}=25$ °C
			1.42			$V_{GE}=0$ V, $I_F=75$ A, $T_{vj}=125$ °C
			1.39			$V_{GE}=0$ V, $I_F=75$ A, $T_{vj}=175$ °C
Gate-emitter leakage current	I_{GES}			100	nA	$V_{CE}=0$ V, $V_{GE}=20$ V
Zero gate voltage collector current	I_{CES}			10		$V_{CE}=650$ V, $V_{GE}=0$ V

Dynamic Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Input capacitance	C_{ies}		8250		pF	$V_{GE}=0\text{ V}$, $V_{CE}=25\text{ V}$, 100 kHz
Output capacitance	C_{oes}		2150		pF	
Reverse transfer capacitance	C_{res}		54.3		pF	
Turn-on delay time	$t_{d(on)}$		111		ns	$V_{GE}=15\text{ V}$, $V_{CC}=400\text{ V}$, $R_G=10$ $I_C=75\text{ A}$
Rise time	t_r		234		ns	
Turn-off delay time	$t_{d(off)}$		178		ns	
Fall time	t_f		95		ns	
Turn-on energy	E_{on}		2.30		mJ	
Turn-off energy	E_{off}		0.85		mJ	
Turn-on delay time	$t_{d(on)}$		86		ns	$V_{GE}=15\text{ V}$, $V_{CC}=400\text{ V}$, $R_G=10$ $I_C=30\text{ A}$
Rise time	t_r		93		ns	
Turn-off delay time	$t_{d(off)}$		217		ns	
Fall time	t_f		55		ns	
Turn-on energy	E_{on}		0.90		mJ	
Turn-off energy	E_{off}		0.45		mJ	

Gate Charge Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Total gate charge	Q_g		175		nC	$V_{GE}=15\text{ V}$, $V_{CC}=520\text{ V}$, $I_C=75\text{ A}$
Gate-emitter charge	Q_{ge}		82		nC	
Gate-collector charge	Q_{gc}		48		nC	

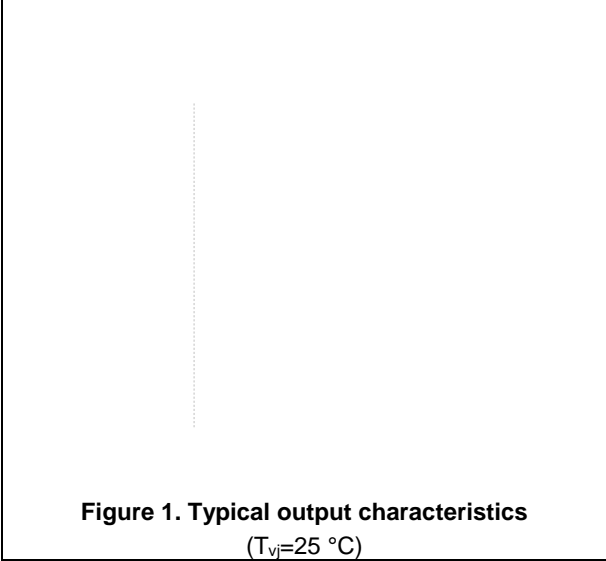
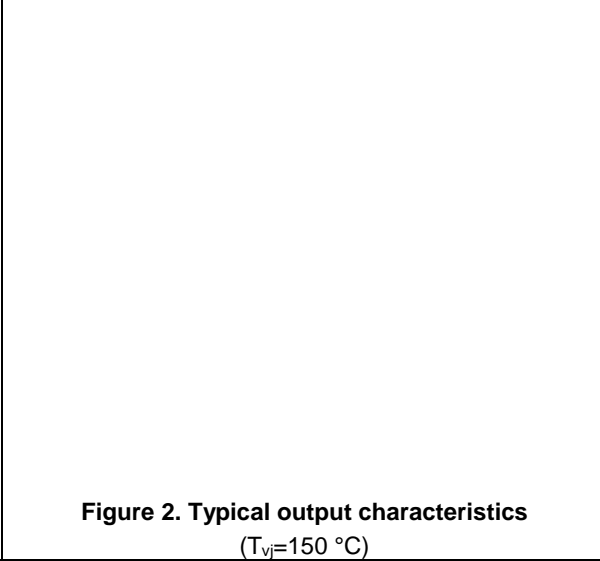
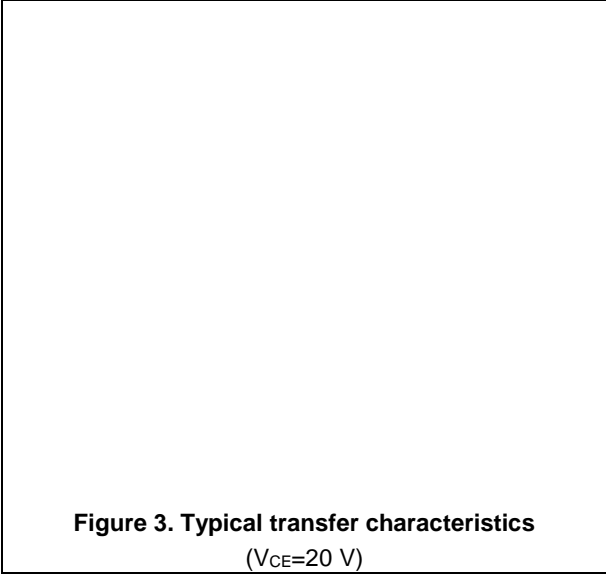
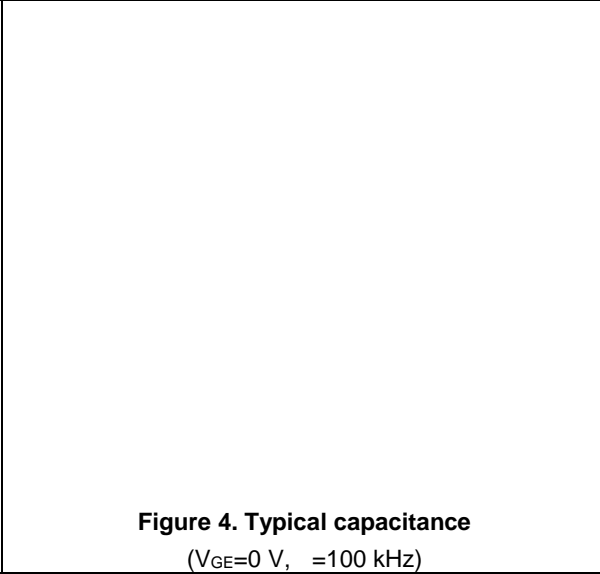
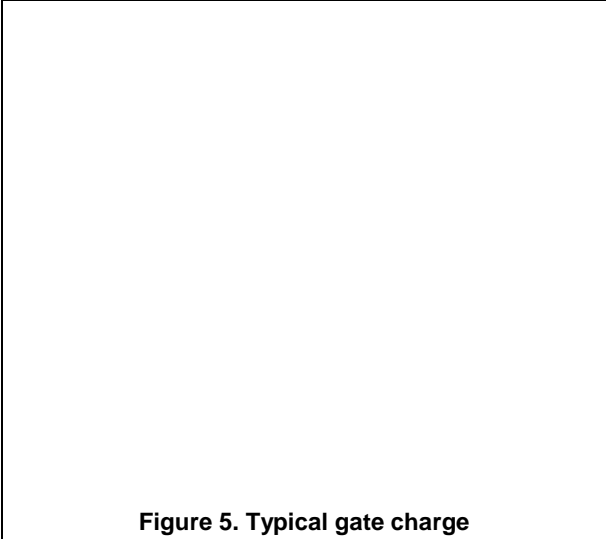
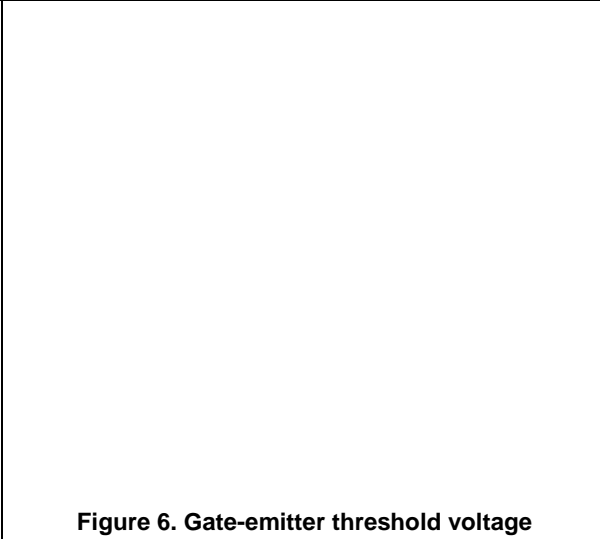
Body Diode Characteristics

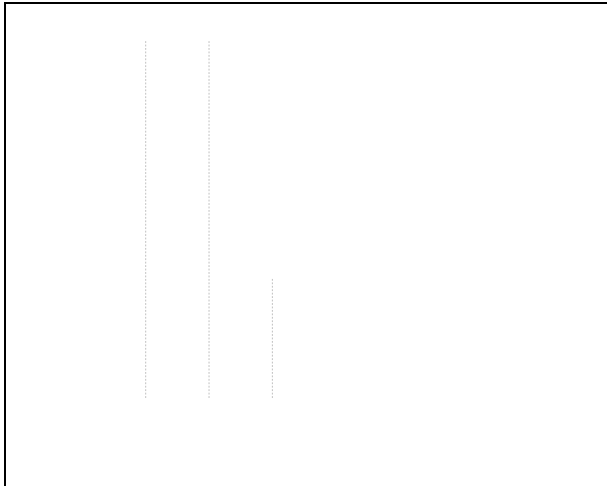
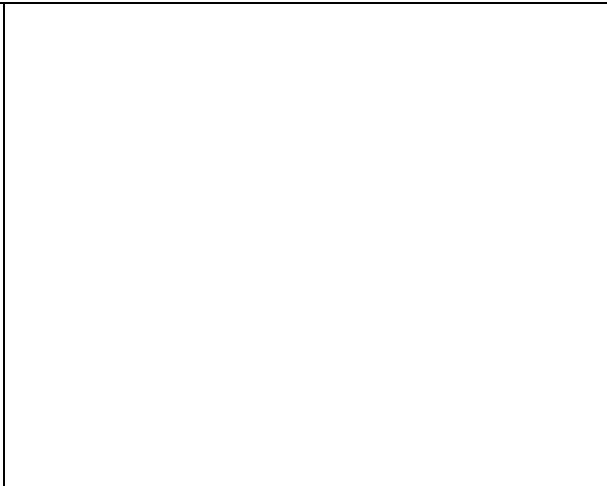


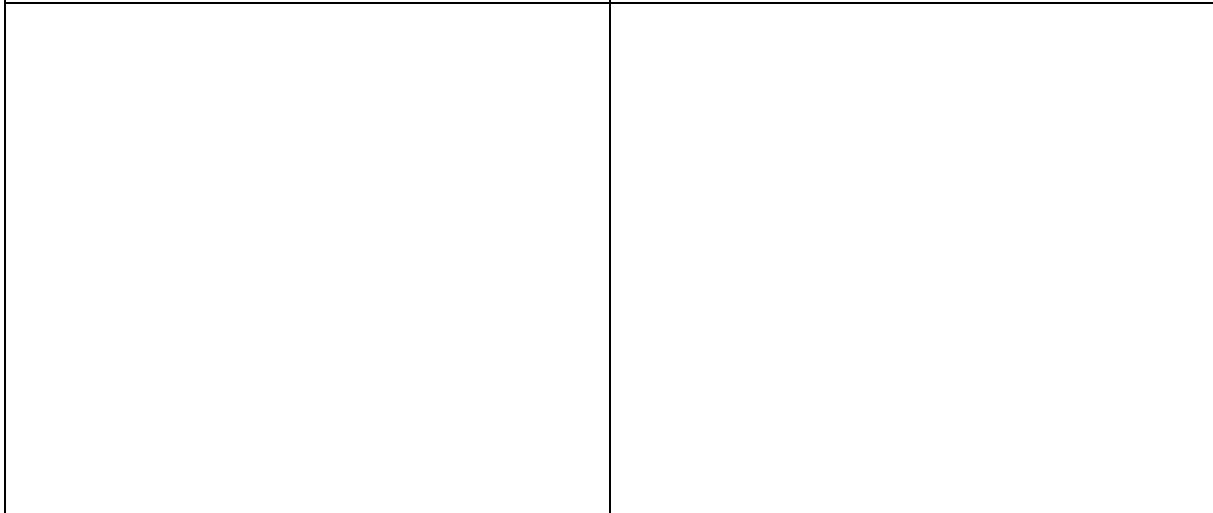
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Diode reverse recovery time	t_{rr}		107		ns	$V_R=400\text{ V}$, $I_F=50\text{ A}$, $di_F/dt=3$ $T_{vj}=25\text{ °C}$
Diode reverse recovery charge	Q_{rr}		1.4		C	
Diode peak reverse recovery current	I_{rrm}		26		A	

Note

- 1) Calculated continuous current based on maximum allowable junction temperature.
- 2) Repetitive rating; pulse width limited by max. junction temperature.
- 3) P_d is based on max. junction temperature, using junction-case thermal resistance.
- 4) The value of $R_{\theta jc}$ is measured with the device mounted on 1 in 2 FR-4 board with 2oz. Copper, in a still air environment with $T_a=25\text{ °C}$.

Electrical Characteristics Diagrams

 <p>Figure 1. Typical output characteristics ($T_{vj}=25\text{ °C}$)</p>	 <p>Figure 2. Typical output characteristics ($T_{vj}=150\text{ °C}$)</p>
 <p>Figure 3. Typical transfer characteristics ($V_{ce}=20\text{ V}$)</p>	 <p>Figure 4. Typical capacitance ($V_{ge}=0\text{ V}, f=100\text{ kHz}$)</p>
 <p>Figure 5. Typical gate charge</p>	 <p>Figure 6. Gate-emitter threshold voltage</p>

 <p>Figure 7. Typical collector-emitter voltage</p>	 <p>Figure 8. Forward characteristic of diode</p>
 <p>Figure 9. Safe operation area T_c=25°C</p>	 <p>Figure 10. IGBT transient thermal impedance</p>
 <p>Figure 11. Diode transient thermal impedance</p>	

0.00.51.01.52.02.5020406080100120140v_{CE}-T_{vj}, Forward current (A)/F, Forward coltage (V)

Package Information

Symbol	mm		
	Min	Nom	Max
A	4.90	5.00	5.10
A1	2.31	2.41	2.51
A2	1.90	2.00	2.10
a	0.00	-	0.15
a'	0.00	-	0.15
b	1.16	-	1.26
b2	1.96	-	2.06
b4	2.96	-	3.06
b6	-	-	2.25
b7	-	-	3.25
c	0.59	-	0.66
c1	0.58	0.60	0.62
D	20.90	21.00	21.10
D1	108 <</MCIE		

