

Features

- Zero Reverse Recovery Current
- Zero Forward Recovery Voltage
- Temperature-independent Switching Behavior
- Positive Temperature Coefficient on V_F
- High-speed switching possible
- High surge current capability



Applications

- Switch Mode Power Supply (SMPS)
- Motor Drives
- Power Factor Correction(PFC)

Ordering Information

Type NO.	Marking	Package
MPCF10N65A	MPCF10N65A	TO-220F-2

Absolute Maximum Ratings ($T_C = 25^\circ\text{C}$, unless otherwise noted)

Parameter	Symbol	Test Conditions	Value	Unit	Note
Repetitive Peak Reverse Voltage	V_{RRM}		650	V	
Surge Peak Reverse Voltage	V_{RSM}		650	V	
DC Blocking Voltage	V_{DC}		650	V	
Continuous Forward Current	I_F	$T_C = 25^\circ\text{C}$	18	A	
		$T_C = 150^\circ\text{C}$	10		
Non-Repetitive Forward Surge Current	I_{FSM}	$T_C = 25^\circ\text{C}$, $t_p = 8.3\text{ms}$, Half Sine Wave	86	A	
Power Dissipation	P_{tot}	$T_C = 25^\circ\text{C}$	50	W	
Operating Junction and Storage Temperature	T_J, T_{stg}		-55~+175	$^\circ\text{C}$	



MPCF10N65A

Electrical Characteristics ($T_J = 25^\circ\text{C}$, unless otherwise noted)							
Parameter	Symbol	Test Conditions	Value			Unit	Note
			Min.	Typ.	Max.		
Forward Voltage	V_F	$I_F = 8\text{A}, T_J = 25^\circ\text{C}$	--	1.4	1.65	V	Fig.1
		$I_F = 8\text{A}, T_J = 175^\circ\text{C}$	--	1.75	2.3		
Reverse Current	I_R	$V_R = 650\text{V}, T_J = 25^\circ\text{C}$	--	1	20	uA	Fig.2
		$V_R = 650\text{V}, T_J = 175^\circ\text{C}$	--	5	100	uA	
Total Capacitance	C	$V_R = 0\text{V}, f = 1\text{ MHz}$	--	440	--	pF	Fig.3
		$V_R = 200\text{V}, f = 1\text{ MHz}$	--	57	--		
		$V_R = 400\text{V}, f = 1\text{ MHz}$	--	46	--		
Total Capacitive charge	Q_c	$V_{DD} = 400\text{V}, T_J = 25^\circ\text{C},$ $Q_c = \int_0^{V_R} C(V) dV$		23		nC	Fig.4
Capacitance Stored Energy	E_c	$V_R = 400\text{V}$		6.5		uJ	Fig.5

Thermal Characteristics				
Parameter	Symbol	Typ.	Unit	Note
Thermal Resistance from Junction to Case	R_{thJC}	3	$^\circ\text{C/W}$	Fig.8



MPCF10N65A

Typical Performance ($T_J = 25^\circ\text{C}$, unless otherwise noted)

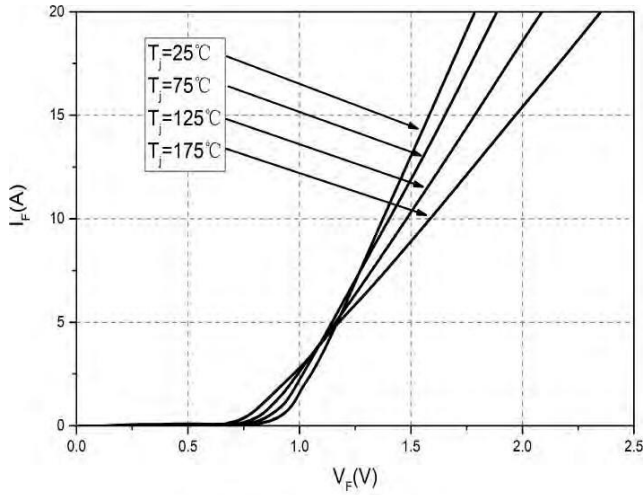


Figure 1. Forward Characteristics

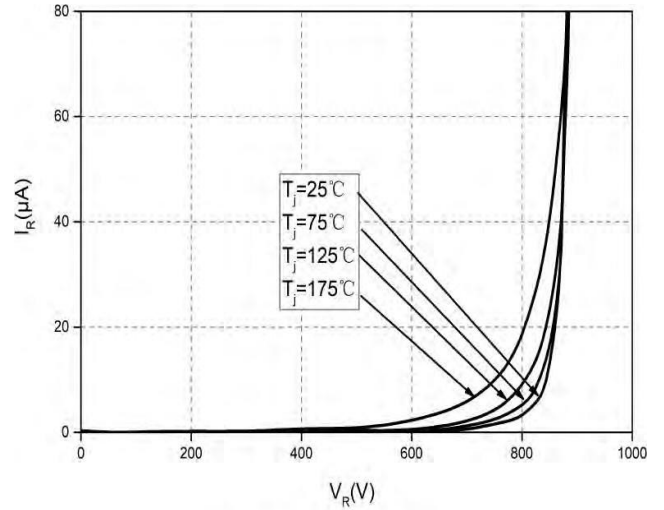


Figure 2. Reverse Characteristics

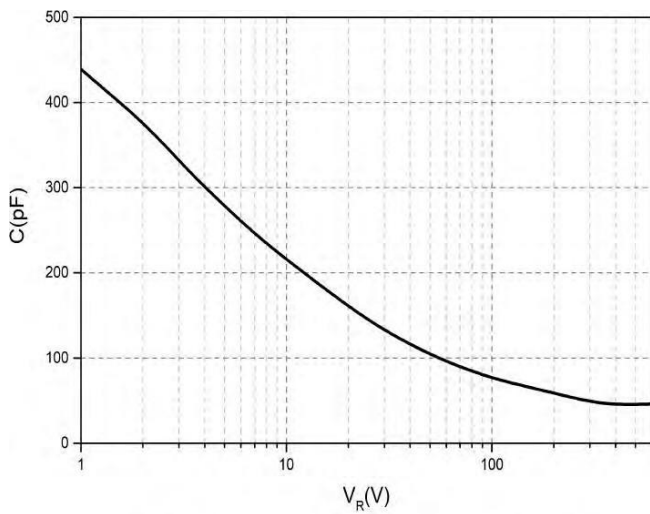


Figure 3. Capacitance vs. Reverse Voltage

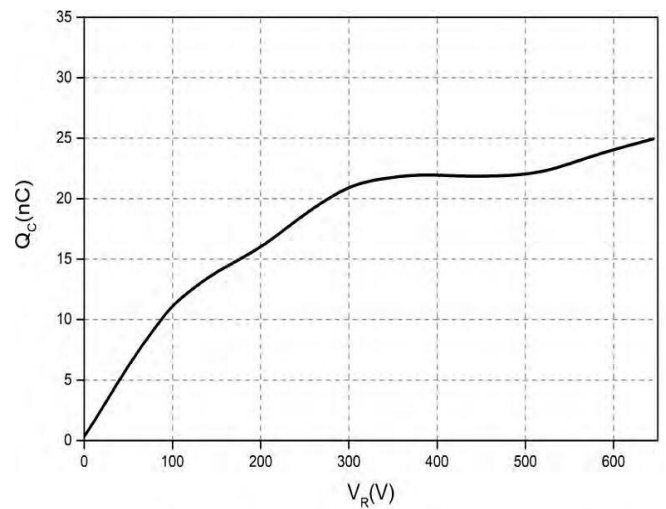


Figure 4. Total Capacitance Charge vs. Reverse Voltage

Typical Performance ($T_J = 25^\circ\text{C}$, unless otherwise noted)

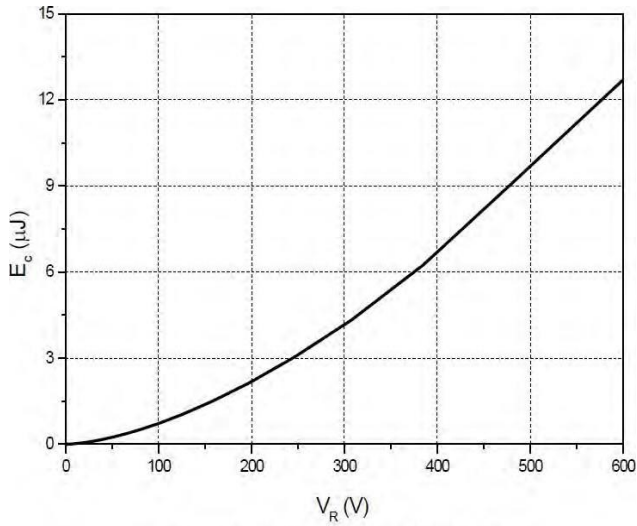


Figure 5. Capacitance Stored Energy

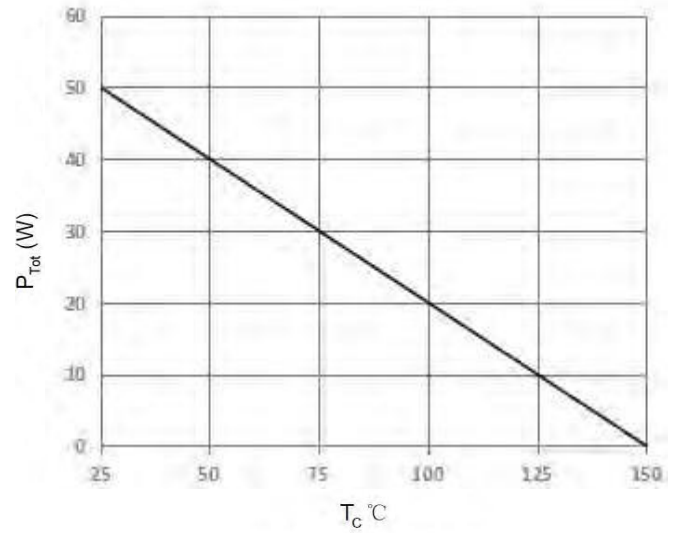


Figure 6. Power Derating

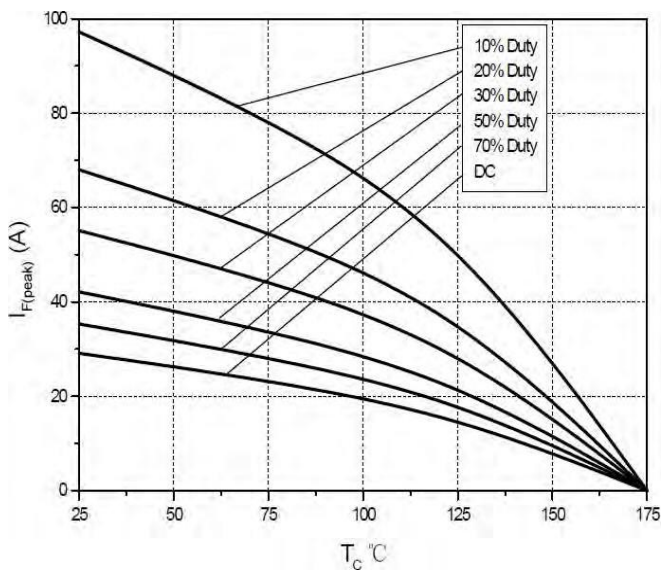


Figure 7. Current Derating

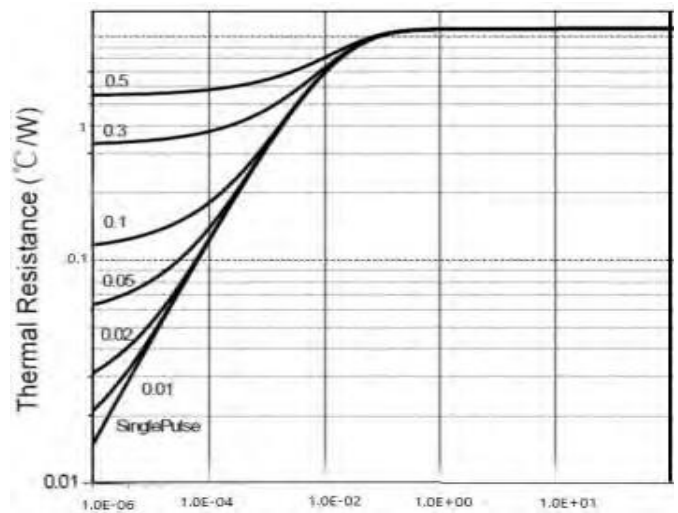
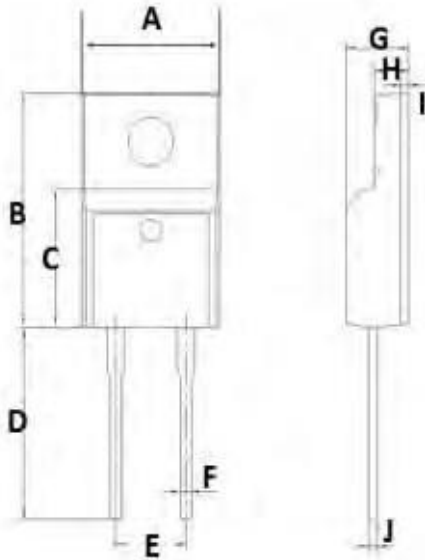


Figure 8. Transient Thermal Impedance

Outline Dimensions

Unit: um



Symbol	Min. (mm)	Typ. (mm)	Max. (mm)
A	9.90	10.10	10.30
B	15.80	16.00	16.20
C	9.10	9.30	9.50
D	12.90	13.20	13.50
E	4.70	5.00	5.30
F	0.60	0.80	1.00
G	4.55	4.75	4.95
H	2.40	2.60	2.80
I	0.40	0.60	0.80
J	0.42	0.50	0.58