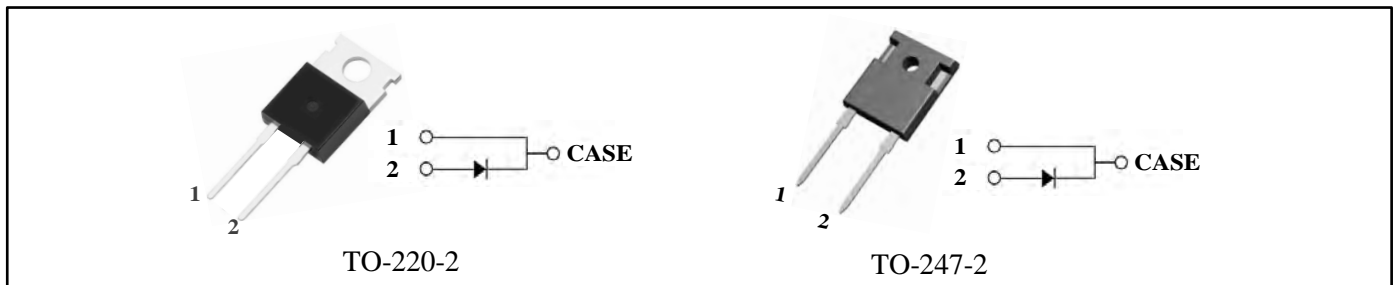


Features

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

Applications

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



Ordering Information		
Ordering code	Marking	Package
MPCC15N120A	MPCC15N120A	TO-220-2
MPCK15N120A	MPCK15N120A	TO-247-2

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}		1200	V	
Surge Peak Reverse Voltage	V_{RSM}		1200	V	
DC Blocking Voltage	V_{DC}		1200	V	
Continuous Forward Current	I_F	$T_C = 25^\circ\text{C}$	49	A	Fig.7
		$T_C = 155^\circ\text{C}$	15		
Non-Repetitive Forward Surge Current	I_{FSM}	$T_C = 25^\circ\text{C}$, $t_p=8.3\text{ms}$, Half Sine Wave	105	A	
Non-Repetitive Forward Surge Current	$I_{F,Max}$	$T_C = 25^\circ\text{C}$, $t_p=10\mu\text{s}$, Pulse	900	A	
Power Dissipation	P_{tot}	$T_C = 25^\circ\text{C}$	200	W	Fig.6
Operating Junction and Storage Temperature	T_J, T_{stg}		175, -55~+175	$^\circ\text{C}$	



MPCK15N120A

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	$I_F = 15\text{A}, T_J = 25^\circ\text{C}$	--	1.5	1.8	V	Fig.1
		$I_F = 15\text{A}, T_J = 175^\circ\text{C}$	--	2.3	2.5		
Reverse Current	I_R	$V_R = 1200\text{V}, T_J = 25^\circ\text{C}$	--	0.5	10	uA	Fig.2
		$V_R = 1200\text{V}, T_J = 175^\circ\text{C}$	--	5	100	uA	
Total Capacitance	C	$V_R = 0\text{V}, f=1\text{ MHz}$	--	1100	--	pF	Fig.3
		$V_R = 400\text{V}, f=1\text{ MHz}$	--	66	--		
		$V_R = 800\text{V}, f=1\text{ MHz}$	--	55	--		
Total Capacitive charge	Q_c	$V_{DD} = 1200\text{V}, T_J = 25^\circ\text{C},$ $Q_c = \int_0^{V_R} C(V) dV$		50		nC	Fig.4
Capacitance Stored Energy	E_c	$V_R = 600\text{V}$		15		uJ	Fig.5

Thermal Characteristics				
Parameter	Symbol	Typ.	Unit	Note
Thermal Resistance from Junction to Case	R_{thJC}	0.7	$^\circ\text{C/W}$	Fig.8



MPCK15N120A

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

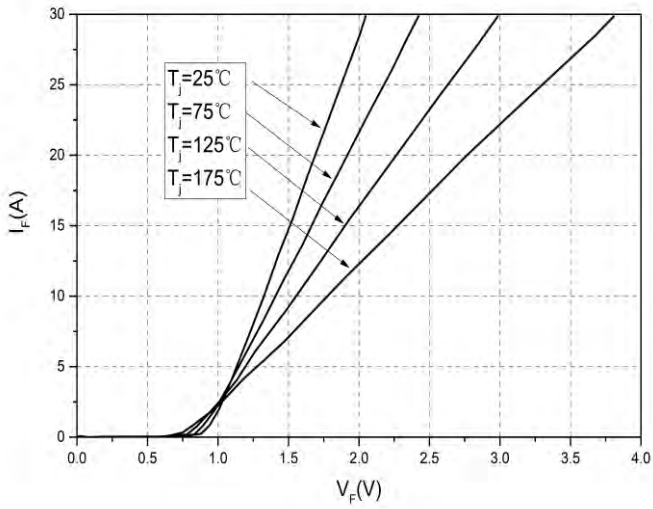


Figure 1. Forward Characteristics

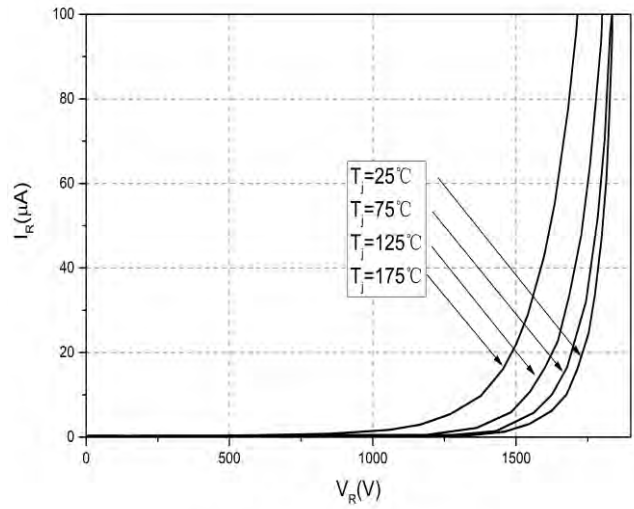


Figure 2. Reverse Characteristics

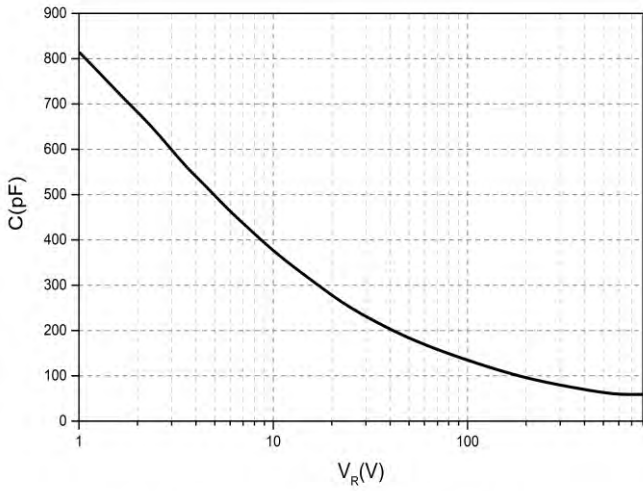


Figure 3. Capacitance vs. Reverse Voltage

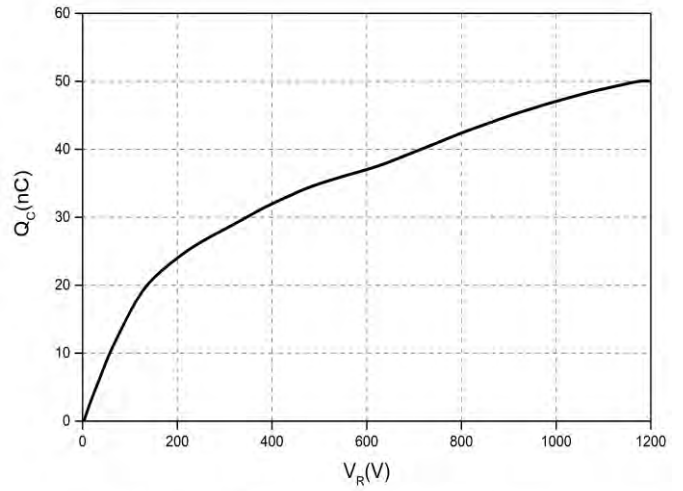


Figure 4. Total Capacitance Charge vs. Reverse Voltage



MPCK15N120A

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

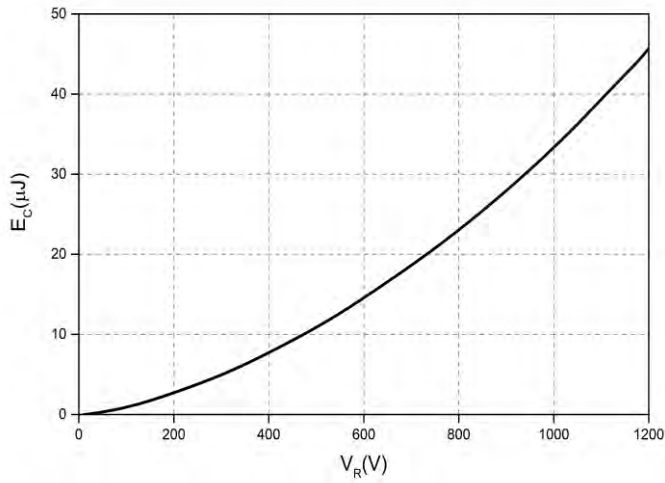


Figure 5. Capacitance Stored Energy

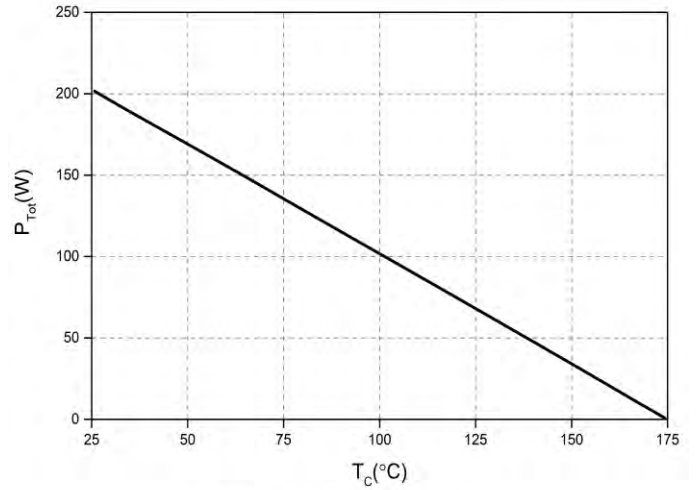


Figure 6. Power derating

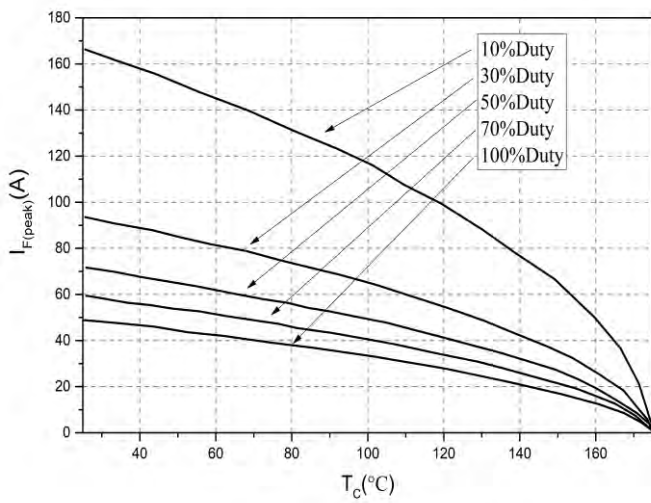


Figure 7. Current Derating

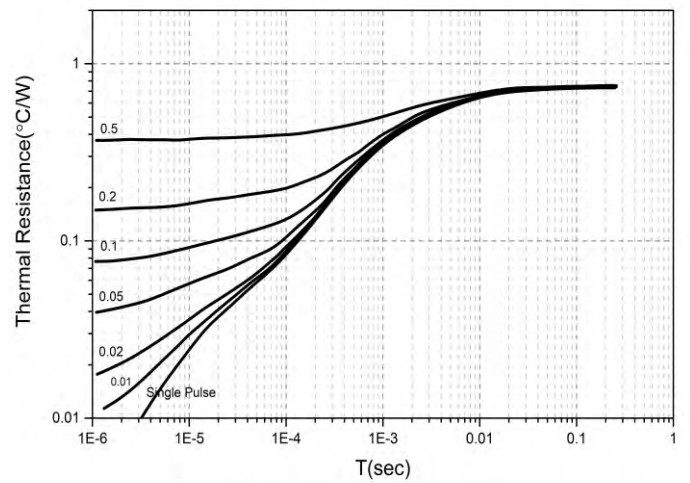


Figure 8. Transient Thermal Impedance



MPCK15N120A

Outline Dimensions

Unit: um

TO-220-2

