

TO-220F-2L-A Plastic-Encapsulate Diode

CSDF10H65S Silicon Carbide Schottky Diode

MAIN CHARACTERISTICS

I_o	10A($T_c \leq 137^\circ\text{C}$)
V_{RRM}	650V
T_j	175°C
$V_{F(typ)}$	1.26V (@ $T_j=25^\circ\text{C}$) 1.40V (@ $T_j=175^\circ\text{C}$)

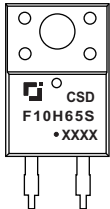
FEATURES

- Zero Reverse Recovery Current
- Zero Forward Recovery Voltage
- Temperature-independent performance
- High-speed switching
- Low switching loss
- Low Leakage Current

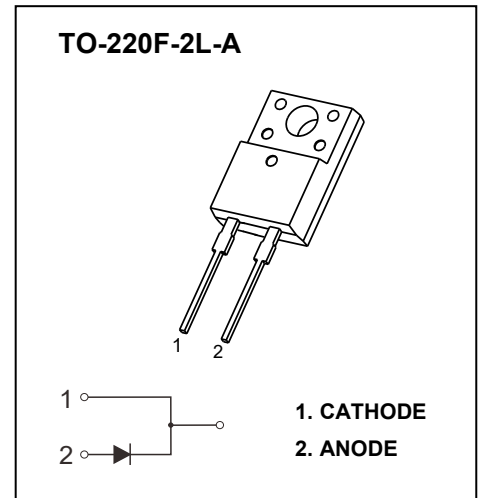
Application

- Industrial Power Supplies
- Power factor correction
- Motor drive traction
- EV charging station
- Solar Inverters

MARKING



CSDF10H65S = Device code
 Solid dot = Green molding compound device
 if none, the normal device
 XXXX = Code



MAXIMUM RATINGS ($T_j=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Value	Unit	
V_{RRM}	Peak repetitive reverse voltage	650	V	
V_{RWM}	Working peak reverse voltage			
V_R	DC blocking voltage			
$I_{F(AV)}$	Average Forward Current	$T_c \leq 25^\circ\text{C}$	24	A
		$T_c \leq 100^\circ\text{C}$	16	A
		$T_c \leq 137^\circ\text{C}$	10	A
I_{FSM}	Non-Repetitive peak forward surge current (10ms half sine wave)	76	A	
$\int i^2 dt$	$\int i^2 dt$ value ($t_p=10\text{ms}$)	30	A ² s	
P_D	Power dissipation	56	W	
$R_{\theta JC}$	Thermal Resistance From Junction to Case	2.7	°C/W	
T_j	Junction temperature	-55~175	°C	
T_{stg}	Storage temperature	-55~175	°C	

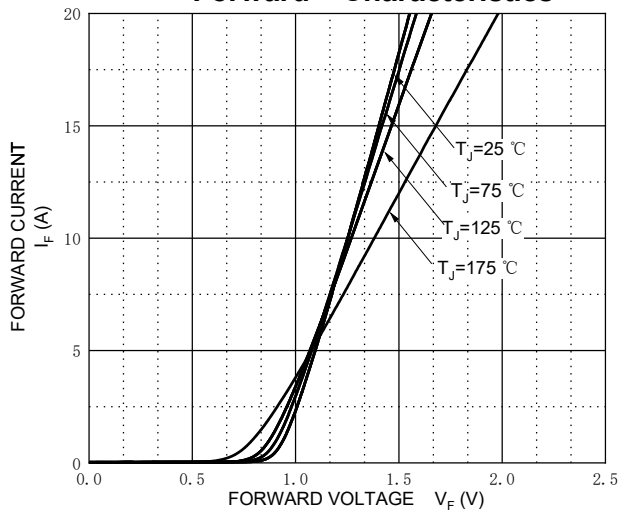
Typical Characteristics

ELECTRICAL CHARACTERISTICS($T_j=25^{\circ}\text{C}$ unless otherwise specified)

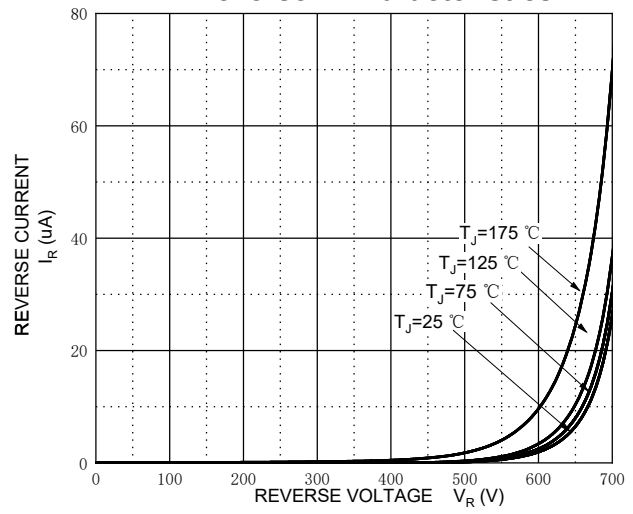
Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Reverse voltage	$V_{(BR)}$	$I_R=100\mu\text{A}$	650			V
Reverse current	I_R	$V_R=650\text{V}$	$T_j=25^{\circ}\text{C}$	5.6	5.0	μA
			$T_j=175^{\circ}\text{C}$	25	500	μA
Forward voltage	V_F	$I_F=10\text{A}$	$T_j=25^{\circ}\text{C}$	1.26	1.5	V
			$T_j=175^{\circ}\text{C}$	1.40		V
Total capacitance	C	$V_R=0\text{V}, f=1\text{MHz}$		650		pF
		$V_R=200\text{V}, f=1\text{MHz}$		64		pF
		$V_R=400\text{V}, f=1\text{MHz}$		47		pF
Total capacitive charge	Q_C	$V_R=400\text{V}$ $Q_C=\int_0^{V_R} C(V)dV$		36		nC
Capacitance Stored Energy	E_C	$V_R=400\text{V}$ $E_C=\int_0^{V_R} C(V) \cdot VdV$		6		μJ

Typical Characteristics

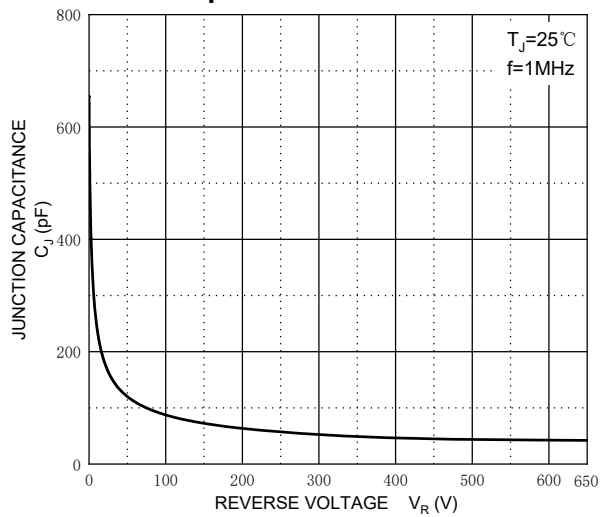
Forward Characteristics



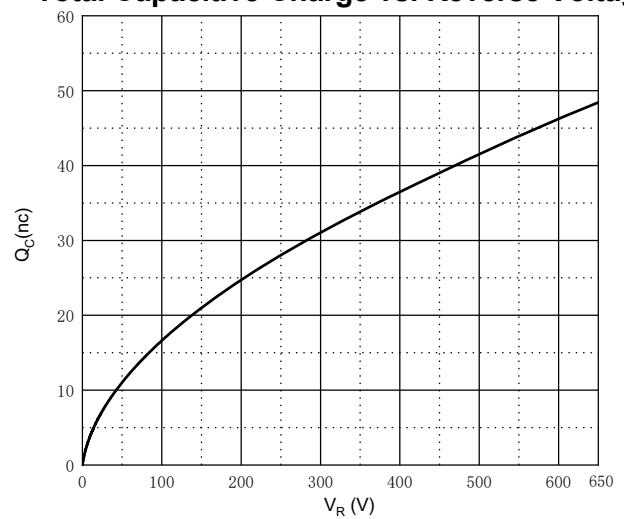
Reverse Characteristics



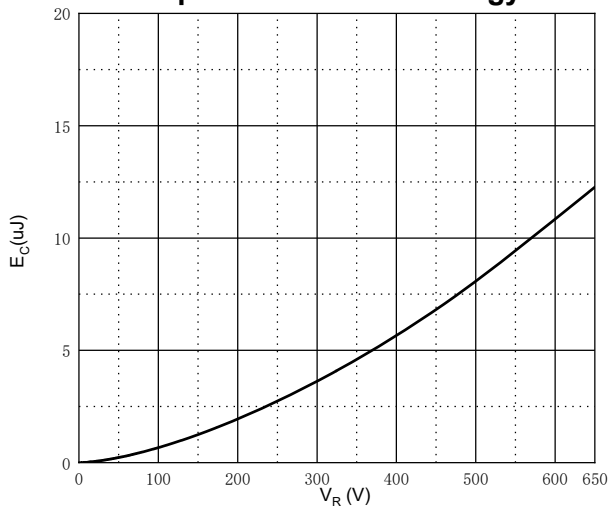
Capacitance Characteristics



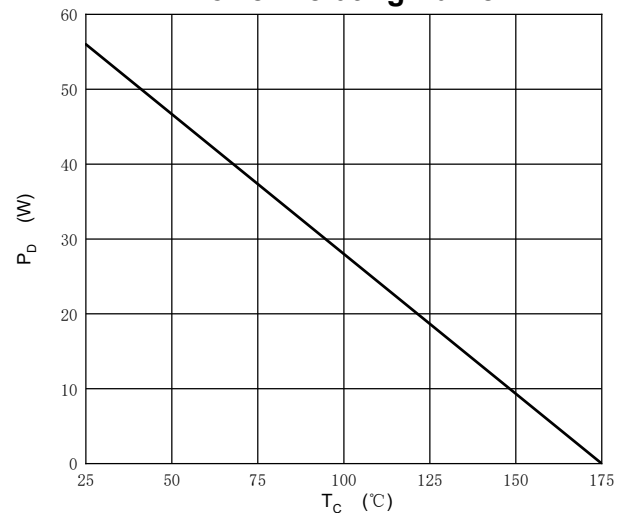
Total Capacitive Charge vs. Reverse Voltage



Capacitance Stored Energy

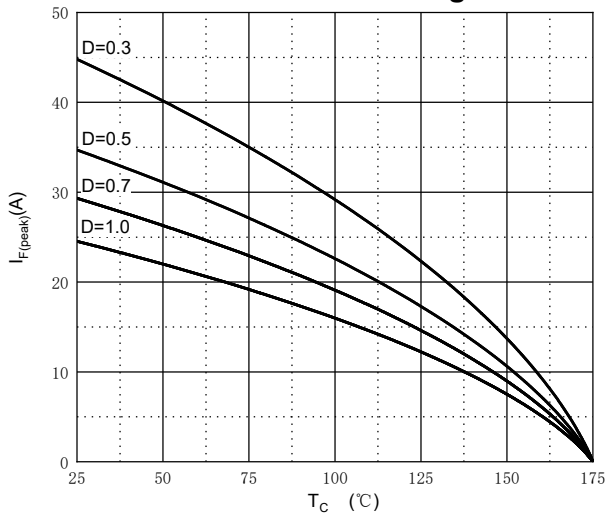


Power Derating Curve

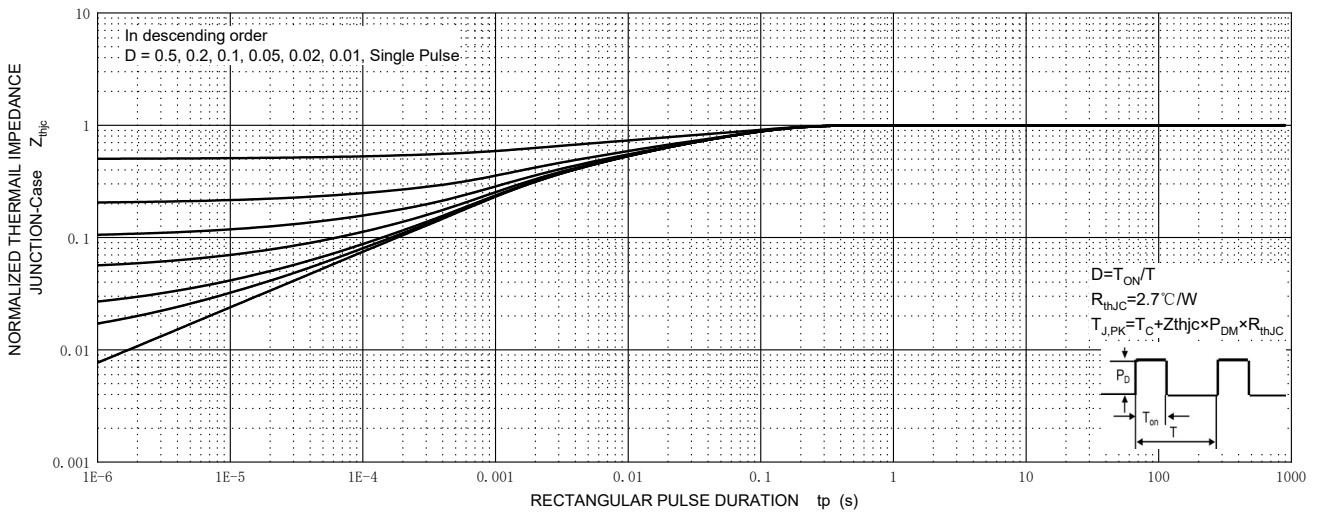


Typical Characteristics

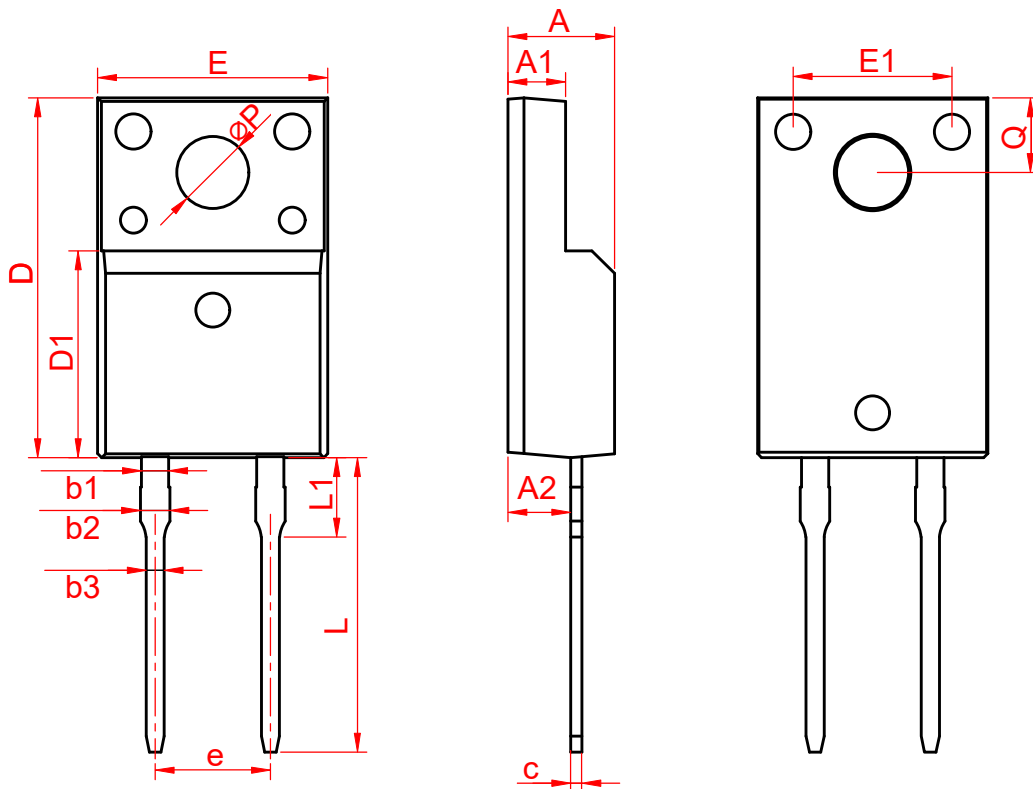
Current Derating



CSDF10H65S Transient Thermal Impedance, Junction-Case



TO-220F-2L-A PACKAGE OUTLINE



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	4.50	4.90	0.178	0.193
A1	2.34	2.74	0.092	0.108
A2	2.66	2.86	0.105	0.113
b1	1.18	1.24	0.046	0.049
b2	1.22	1.38	0.048	0.054
b3	0.75	0.85	0.030	0.033
c	0.45	0.55	0.018	0.022
D	15.67	16.07	0.617	0.633
D1	9.04	9.20	0.356	0.362
e	5.08TYP.		0.200TYP.	
E	10.00	10.30	0.394	0.406
E1	6.90	7.10	0.272	0.280
L	12.78	13.18	0.503	0.519
L1	3.40	3.60	0.134	0.142
Q	3.20	3.40	0.126	0.134
ΦP	3.08	3.28	0.121	0.129