

Table S1. VIF.

V0	V1	V2	V3	V4	V5	V6	V8	V18	V19
109.129	3.251	2.186	11.129	3.124	50.228	129.231	6.58	45.82	277.723

Table S2. Prediction results.

	LR	Ridge	Lasso	Elastic Net	KNN	SVR	DT
Corr	1.000	1.000	1.000	1.000	1.000	0.999	1.000
Std	22.588	22.590	22.596	22.592	7.637	25.414	1.705
Z	214	211	212	209	133	59	52
CV_Mean	512.513	512.463	512.209	512.463	226.130	723.481	21.587
CV_Std	26.754	26.672	26.281	22.917	73.213	26.741	9.070
Score	0.9992208	0.9992207	0.9992203	0.9992205	0.9999109	0.9990136	0.9999956

Table S3. Prediction results.

	RF	GBR	XGB	AdaBoost
Corr	1.000	1.000	1.000	1.000
Std	1.183	0.532	0.063	0.055
Z	54	21	98	113
CV_Mean	11.730	14.627	10.565	11.636
CV_Std	5.054	7.733	4.546	7.395
Score	0.9999979	0.9999996	1.0000000	1.0000000

Table S4. Main parameters of the ML model.

LR	Ridge	Lasso	Elastic Net	KNN	SVR	DT
n_jobs = 16	alpha = 0.25, max_iter = 500	alpha = 0.0081, max_iter = 500	alpha = 0.0003, l1_ratio = 0.9, max_iter = 500	n_neighbors = 3	C = 1.9, max_iter = 500	max_depth = 16, max_features = 8, min_samples_split = 3, min_samples_leaf = 2, min_impurity_split = 1e-06

Table S5. Main parameters of the EL model.

RF	GBR	XGB	AdaBoost
n_estimators = 1000, max_features = 8, min_samples_leaf = 1, min_samples_split = 2, min_impurity_split = 1e-07	n_estimators = 1500, learning_rate = 0.4, max_depth = 6, max_features = 10, min_samples_split = 2, min_samples_leaf = 2, loss = 'huber', alpha = 0.99, min_impurity_split = 1e-3, subsample = 1	booster = 'gbtree', n_estimators = 1500, learning_rate = 0.1, max_depth = 10, min_child_weight = 1, colsample_bytree = 1, gamma = 0.002, reg_alpha = 0, reg_lambda = 1, subsample = 0.9, colsample_bynode = 1, scale_pos_weight = 1, num_parallel_tree = 1, colsample_bylevel = 1	base_estimator = DecisionTreeRegressor (), loss = liner, n_estimators = 100, learning_rate = 0.1

Table S6. Main parameters of the DL model.

FFN	CNN
learning_rate = 0.006,	batch_size = 256,
batch_size = 64,	learning_rate1 = 0.001,
input_number = 10,	epochs1 = 1200,
hidden1_number = 256,	weight_decay1 = 0.000000001,
hidden2_number = 128,	learning_rate2 = 0.0006,
hidden3_number = 32,	epochs2 = 1200,
out_number = 1,	weight_decay2 = 0.000000001,
epochs = 2000	learning_rate3 = 0.00006,
	epochs3 = 1500,
	weight_decay3 = 0.000000001

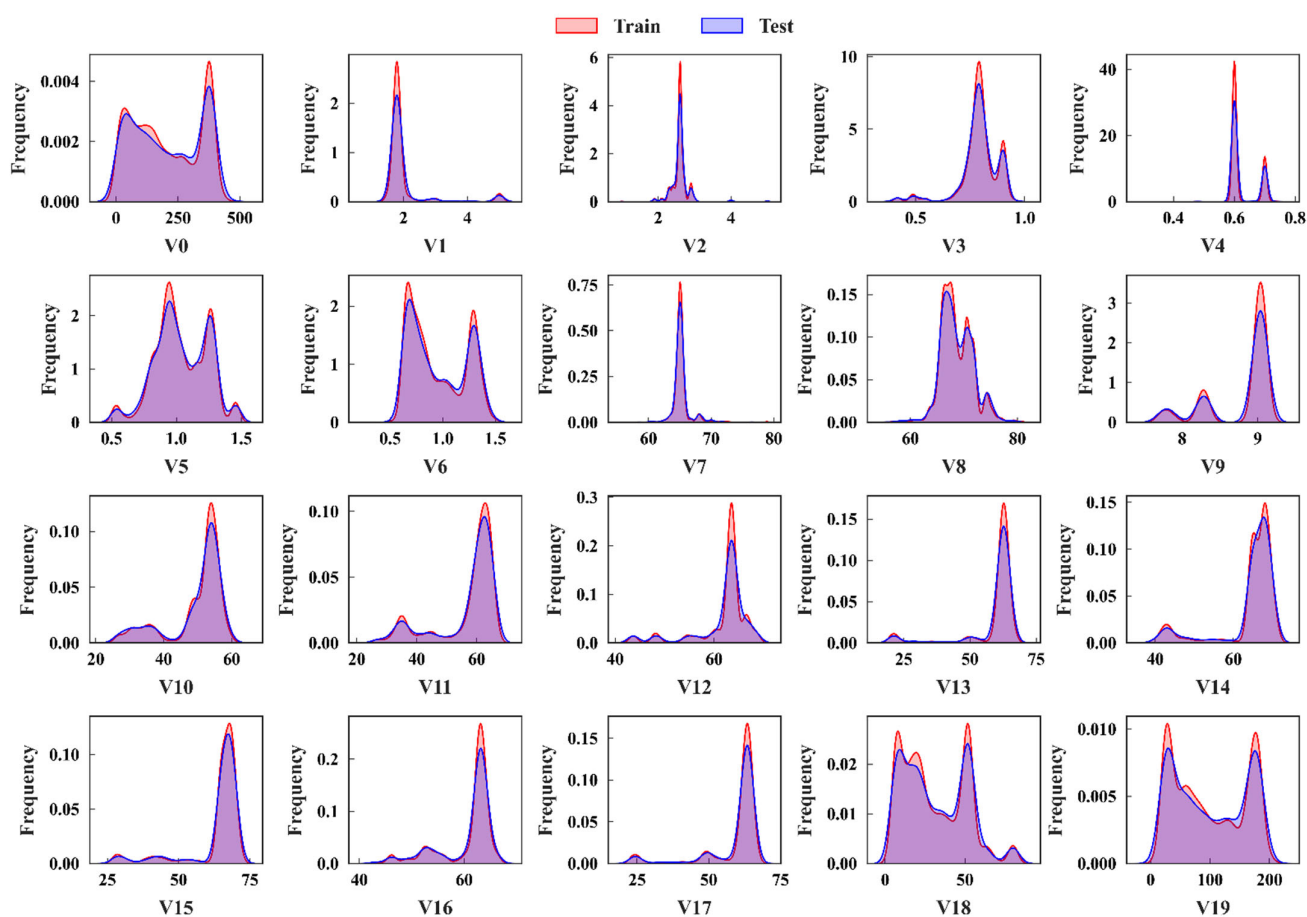
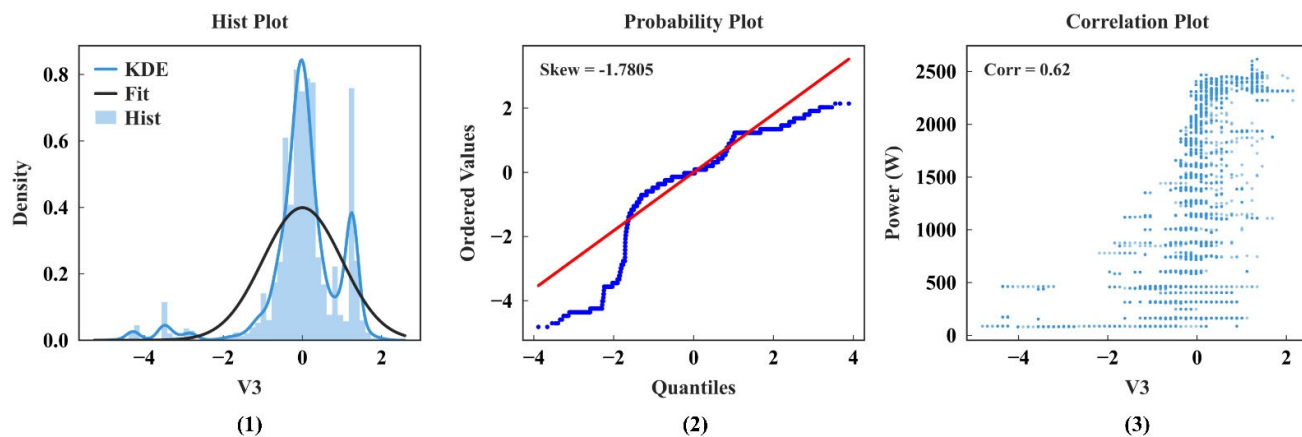
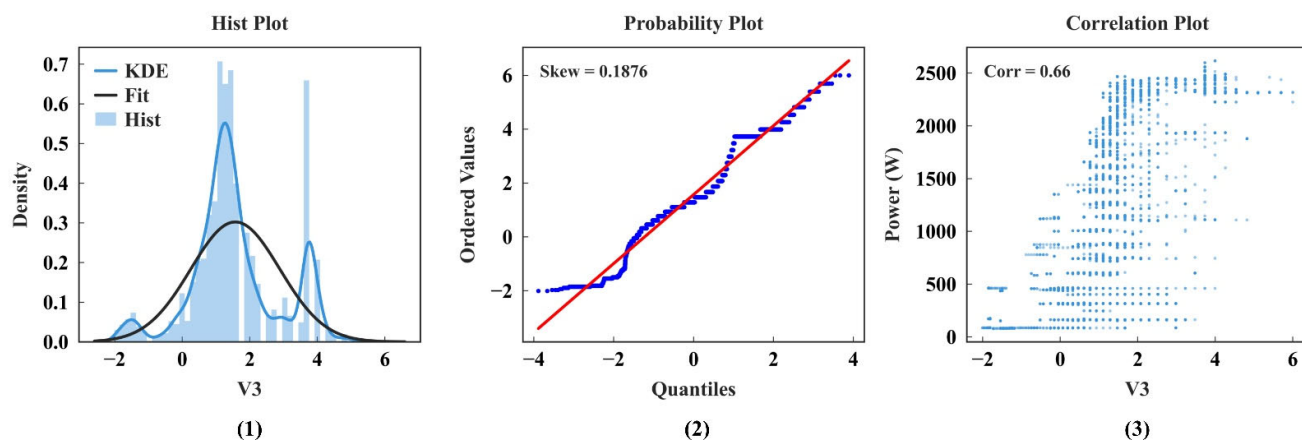


Figure S1. KDE distribution map.



(a) Before the Yeo-Johnson transformation



(b) After the Yeo-Johnson transformation

Figure S2. Yeo-Johnson transformation.

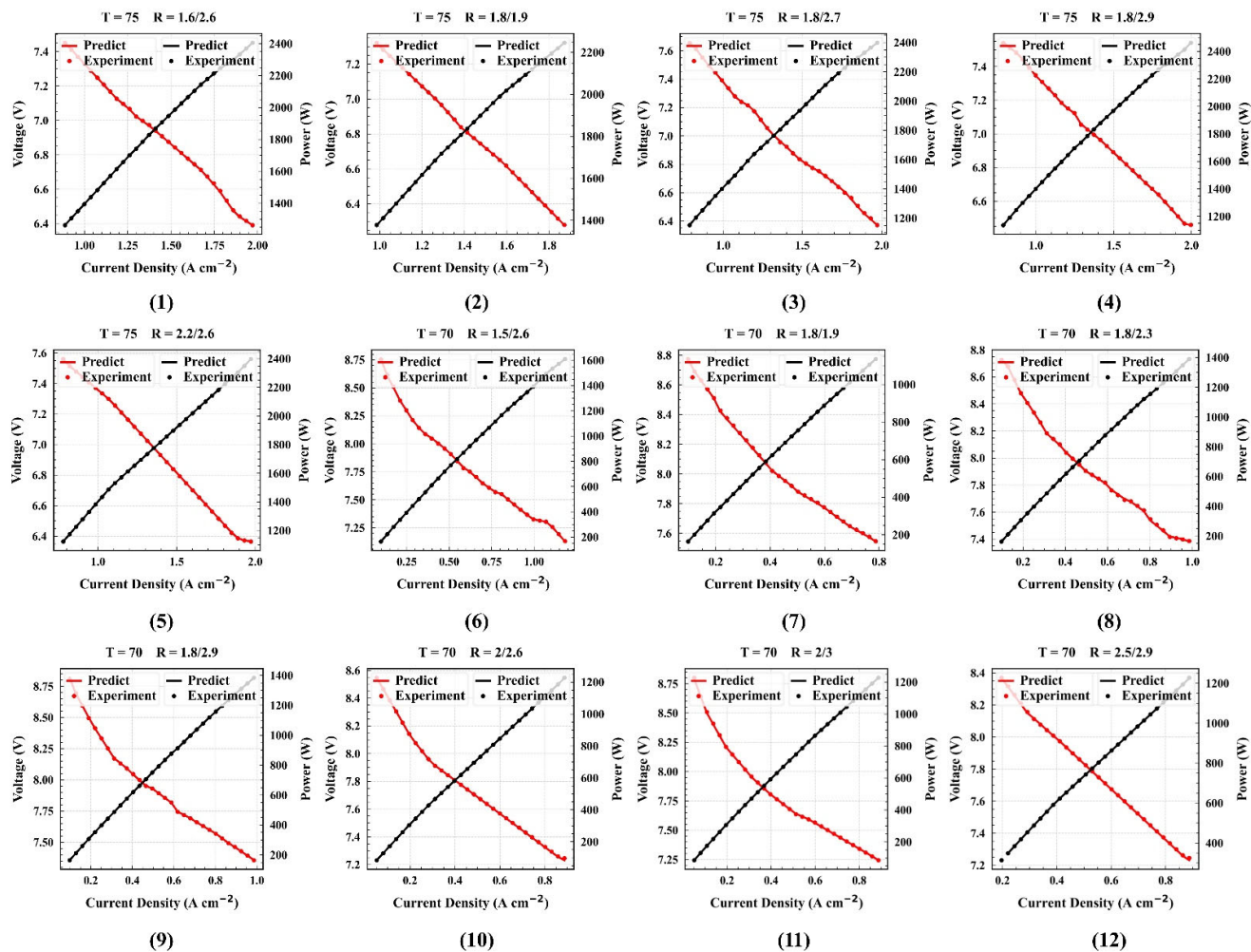


Figure S3. Polarization curves.