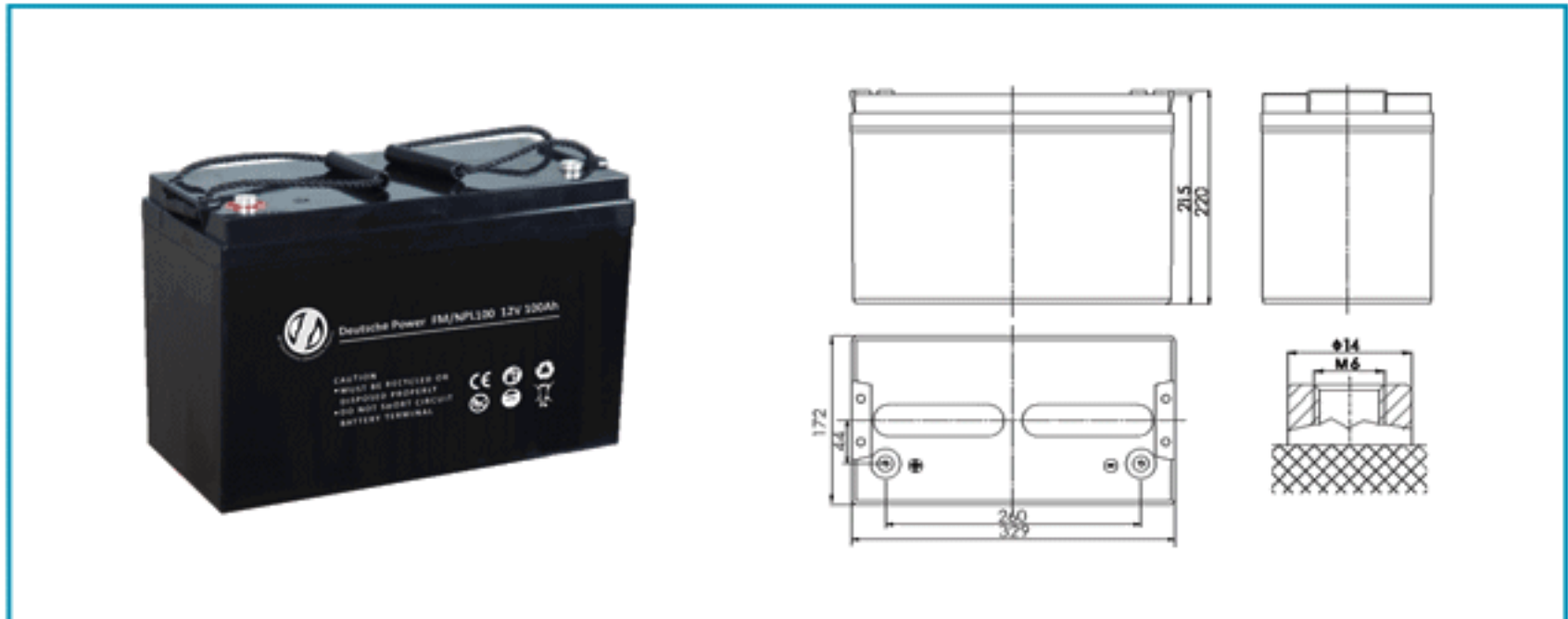


# FM/NPL100

FM/NPL Battery Series  
Solar Energy (Deep Cycle)



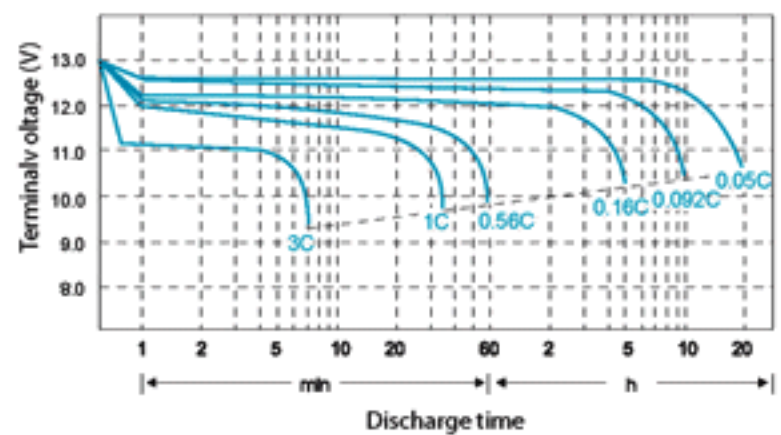
## Specifications

Nominal Voltage	12V	
Rated Capacity (20 hour rate)	100Ah	
Dimensions	Total Height (with terminals)	8.66 inches(220mm)
	Height	8.46 inches(215mm)
	length	12.9 inches(329mm)
	width	6.77 inches(172mm)
Weight	Approx.63.8 Pound(29kg)	

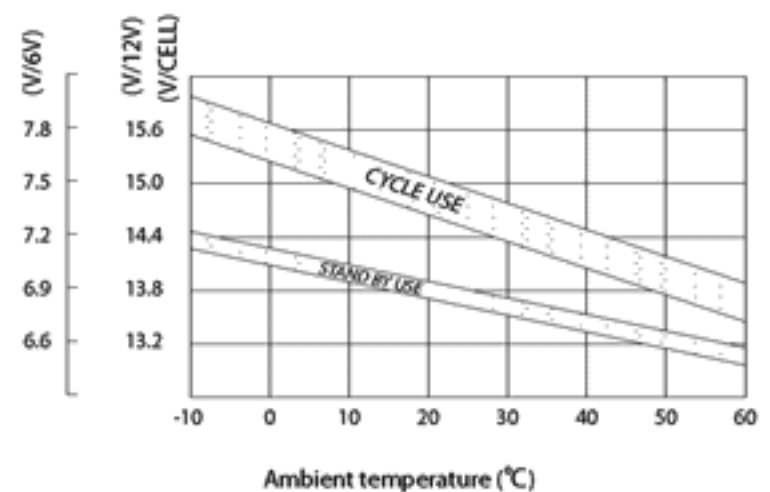
## Characteristics

Capacity 77°F (25°C)	20 hour rate (5.0A)	100 Ah
	10 hour rate (9.20A)	92 Ah
	5 hour rate (16.0A)	80 Ah
	1hour rate (60.0A)	60 Ah
	15Minute Rate (164A)	41 Ah
Internal Resistance	Full charged Battery 77°F (25°C)	5.0 M
	104°F (40°C)	102%
Capacity affected by Temperature (20hour rate)	77°F (25°C)	100%
	7°F (0°C)	85%
	5°F (-15°C)	65%
Self-Discharge 77°F (25°C)	Capacity after 3 month storage	91%
	Capacity after 6 month storage	81%
	Capacity after 12 month storage	60%
Max. Discharge Current 77°F (25°C)	800A(5S)	
Terminal	M2	
Charge (Constant Voltage)	Cycle	Initial Charging Current less than 30A Voltage 14.4~14.7 V / 77°F (25°C)
	Float	Voltage 13.5~13.8V / 77°F (25°C)

## Discharge Curves 77°F (25°C)



## Relationship between charge voltage and temperature



## Constant Current Discharge (AMPERES @25°C)

F.V/Time	5Min	10Min	15Min	30Min	45Min	1Hour	2Hour	3Hour	5Hour	10Hour	24Hour
1.65	311	217	168	102	80.1	54.5	37.8	26.1	17.5	10.6	4.43
1.70	285	205	157	86.8	75.7	51.9	36.9	25.0	16.9	10.4	4.35
1.80	227	173	137	78.4	71.5	49.2	35.3	23.6	16.0	10.0	4.27

## Constant Power Discharge (WATTS PER CELL@25°C)

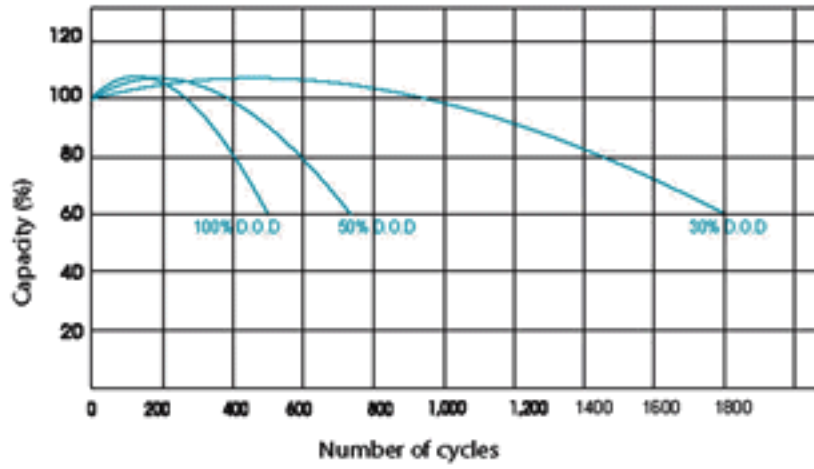
Set off voltage/cell	5min	10min	15min	30min	45min	1h	2h	3h	5h	10h	24h
1.60	571	394	307	191	148	119	70.0	49.1	32.4	18.3	8.11
1.65	542	389	304	185	146	115	69.1	49.0	32.2	18.2	8.10
1.67	540	386	302	173	144	114	68.8	48.6	31.9	18.2	8.09
1.70	506	379	291	162	142	111	68.4	47.7	31.6	18.1	8.07
1.75	461	346	274	156	141	108	67.9	46.4	31.0	18.0	8.06
1.80	423	330	264	151	138	107	66.6	46.1	30.5	17.7	8.04
1.85	339	273	231	141	127	104	64.2	45.0	29.5	16.9	7.62

# FM/NPL100

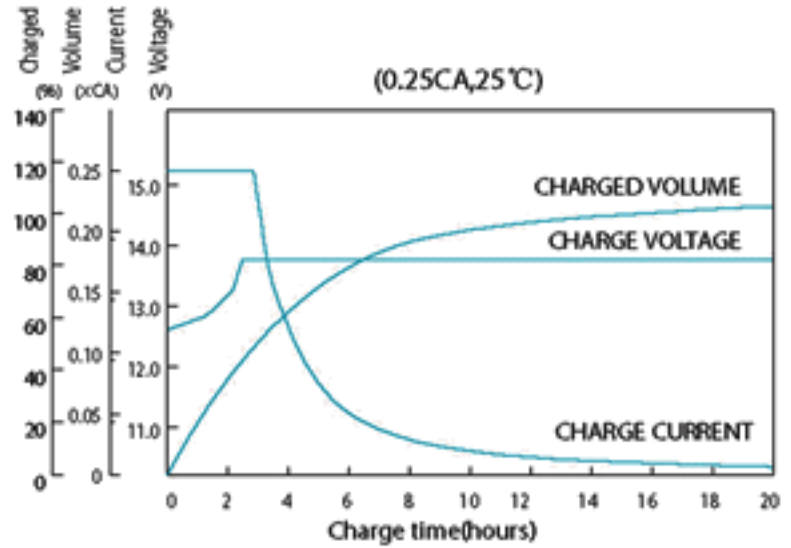
FM/NPL Battery Series  
Solar Energy (Deep Cycle)

The operating environment temperature above 40°C should be avoided. After long term storage, The battery actual capacity would be less than the rated capacity. Full capacity will be obtained through several charge/discharge cycles. To get the longest life, Deutsche Power battery should be fully charged before storage.

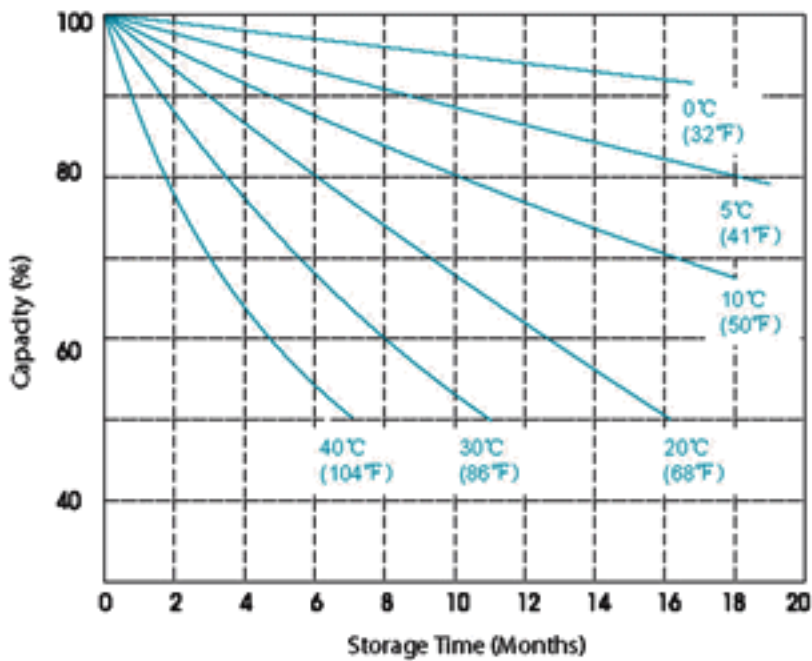
## Cycle service life in relation to depth of discharge



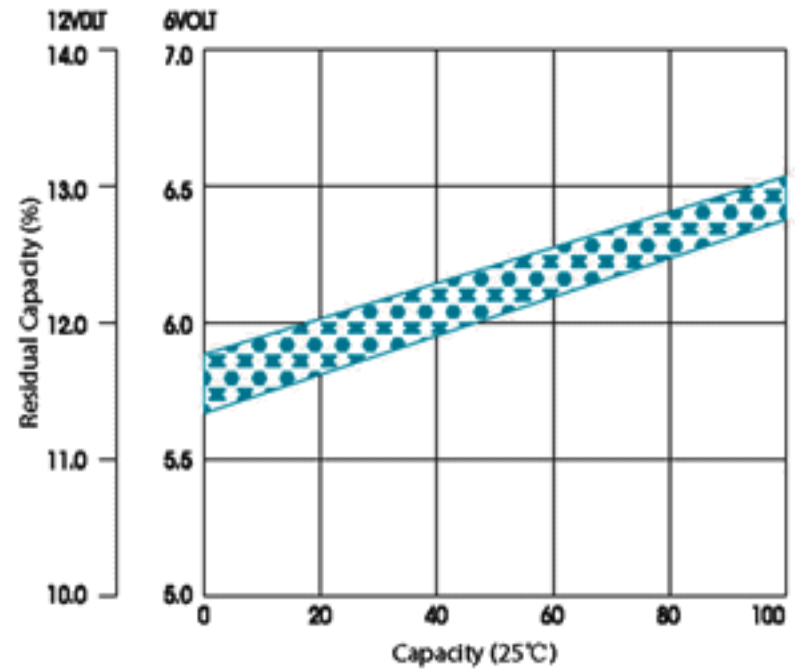
## Constant voltage charge characteristic



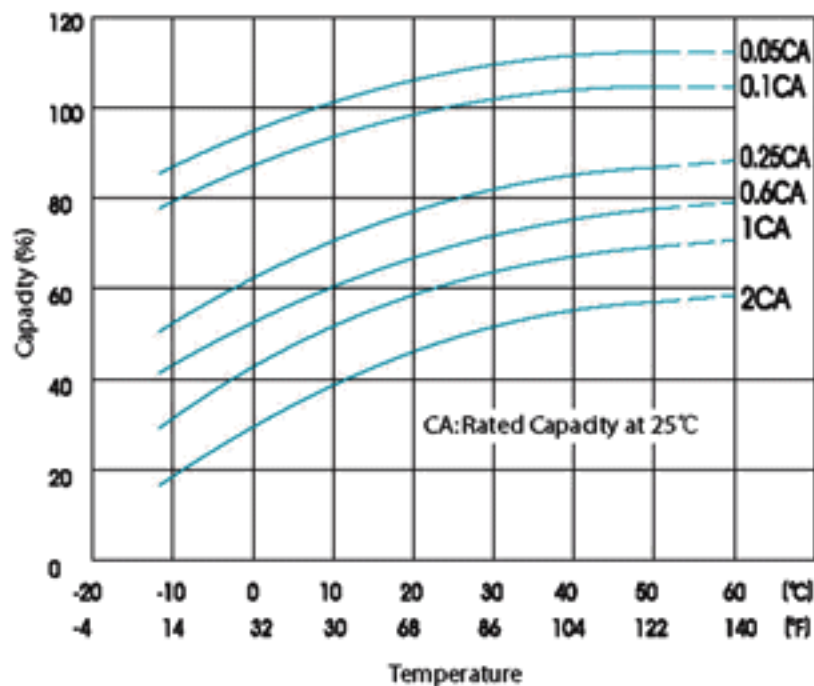
## Self-Discharge Characteristics



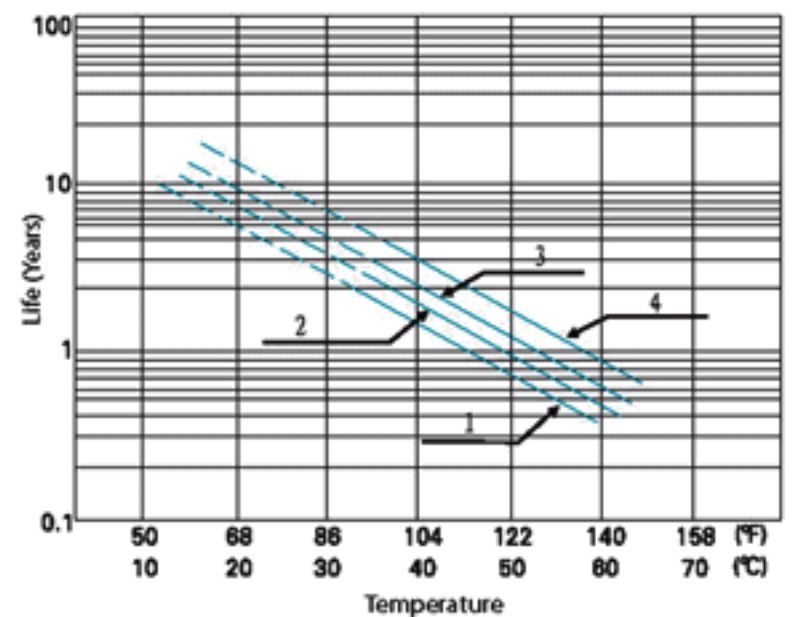
## Relationship of OCV and Residual Capacity % (25°C)



## Temperature effects on capacity

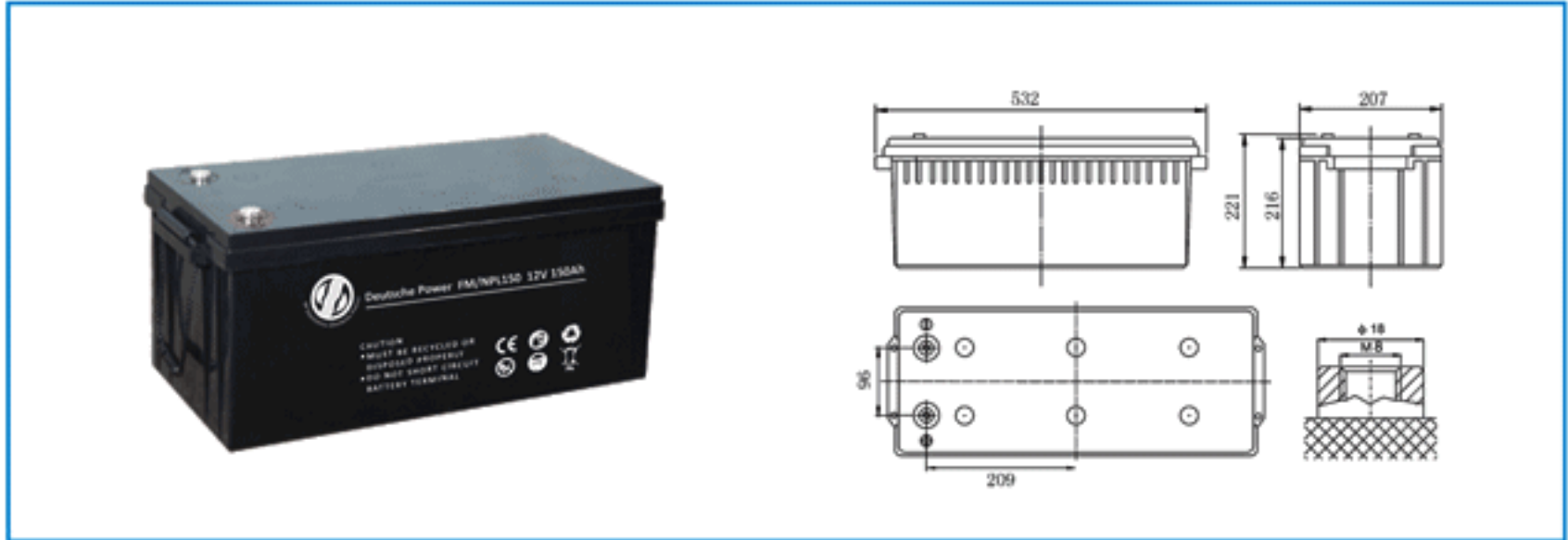


## Temperature effects float life



# FM/NPL150

FM/NPL Battery Series  
Solar Energy (Deep Cycle)



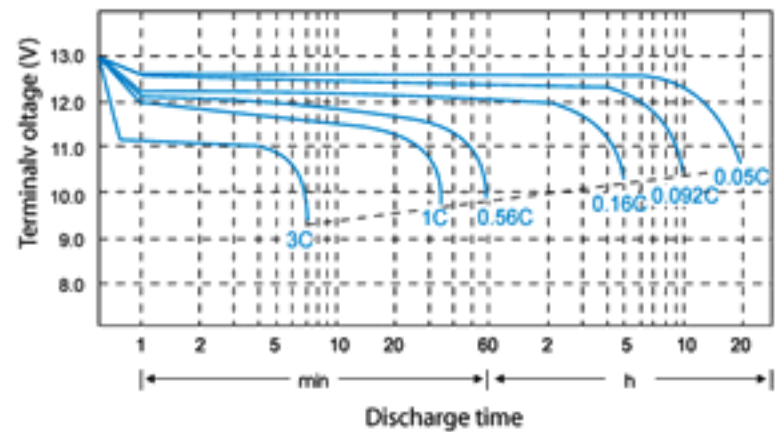
## Specifications

Nominal Voltage	12V	
Rated Capacity (20 hour rate)	150Ah	
Dimensions	Total Height (with terminals)	8.70inches (221mm)
	Height	8.50inches (216mm)
	length	20.94inches (532mm)
	width	8.15inches (207mm)
Weight	Approx. 106.26 Pound(48.3kg)	

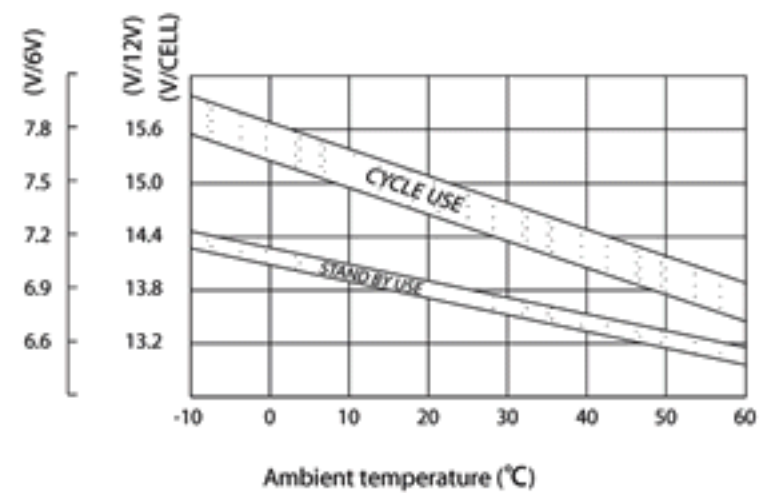
## Characteristics

Capacity 77°F (25°C)	20 hour rate (7.5A)	150Ah
	10 hour rate (13.8A)	138Ah
	5 hour rate (24.0A)	120Ah
	1 hour rate (90.0A)	90Ah
	15 minute Rate (246A)	61.5Ah
Internal Resistance	Full charged Battery 77°F(25°C)	3.0mΩ
Capacity affected by Temperature (20hour rate)	104°F(40°C)	102%
	77°F(25°C)	100%
	32°F(0°C)	85%
	5°F(-15°C)	65%
Self-Discharge 77°F (25°C)	Capacity after 3 monthstorage	91%
	Capacity after 6 monthstorage	81%
	Capacity after 12 monthstorage	60%
Max. Discharge Current 77°F (25°C)	1000A(5S)	
Terminal	M5	
Charge (Constant Voltage)	Cycle	Initial Charging Current less than 45A Voltage 14.4~14.7V/77°F(25°C)
	Float	Voltage 13.5~13.8V/77°F(25°C)

## Discharge Curves 77°F (25°C)



## Relationship between charge voltage and temperature



## Constant Current Discharge (AMPERES @25°C)

F.V/Time	10Min	15Min	30Min	45Min	1Hour	2Hour	3Hour	5Hour	8Hour	10Hour	12Hour	24Hour
1.65	325.5	252.0	153.0	120.2	81.3	56.70	39.15	26.25	18.60	14.70	12.62	6.50
1.70	307.5	235.5	130.2	113.6	77.9	55.35	37.50	25.35	17.85	14.39	12.24	6.38
1.80	259.5	205.5	117.6	107.3	74.1	52.95	35.40	24.00	16.80	13.80	11.90	6.27

## Constant Power Discharge (WATTS PER CELL@25°C)

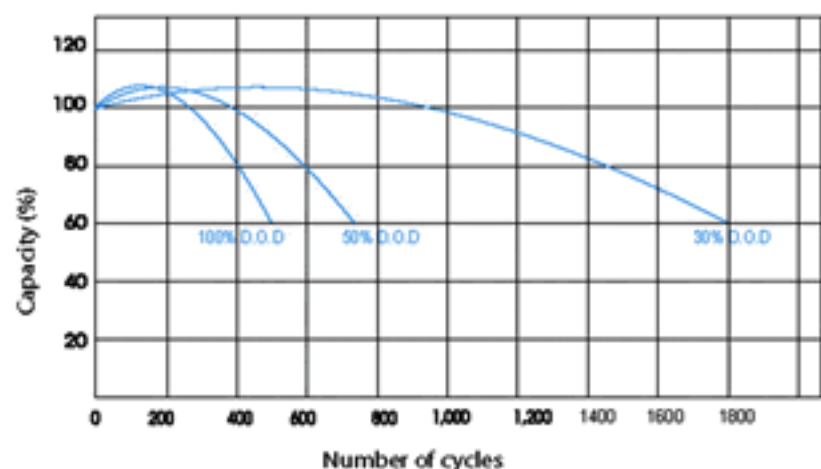
F.V/Time	10Min	15Min	30Min	45Min	1Hour	2Hour	3Hour	5Hour	8Hour	10Hour	12Hour	24Hour
1.60	583	454	286	219	178	106	73.7	48.6	33.5	27.8	23.7	12.2
1.65	576	451	282	217	175	104	72.0	48.1	33.4	27.6	23.6	12.1
1.67	571	450	276	213	172	103	71.3	47.8	33.3	27.5	23.5	12.0
1.70	560	441	247	210	168	102	70.4	47.1	33.1	27.2	23.3	11.9
1.75	519	411	234	208	162	101	69.6	46.5	32.5	27.0	23.1	11.8
1.80	487	391	214	205	159	100	68.7	45.2	32.1	26.5	22.9	11.6
1.85	404	342	208	188	148	95.5	67.8	44.0	29.9	25.2	21.4	11.4
1.90	335	299	202	172	138	91.2	66.9	42.8	27.9	24.0	20.0	11.2

# FM/NPL150

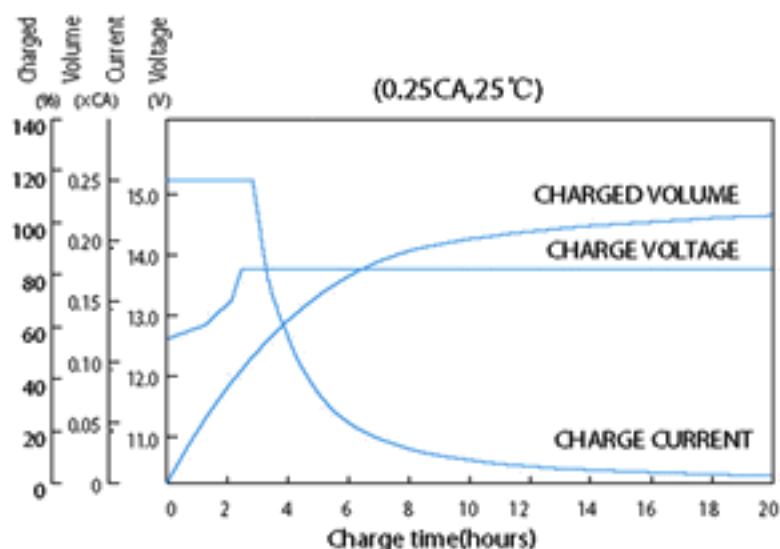
FM/NPL Battery Series  
Solar Energy (Deep Cycle)

The operating environment temperature above 40°C should be avoided. After long term storage, The battery actual capacity would be less than the rated capacity. Full capacity will be obtained through several charge/discharge cycles. To get the longest life, Deutsche Power battery should be fully charged before storage.

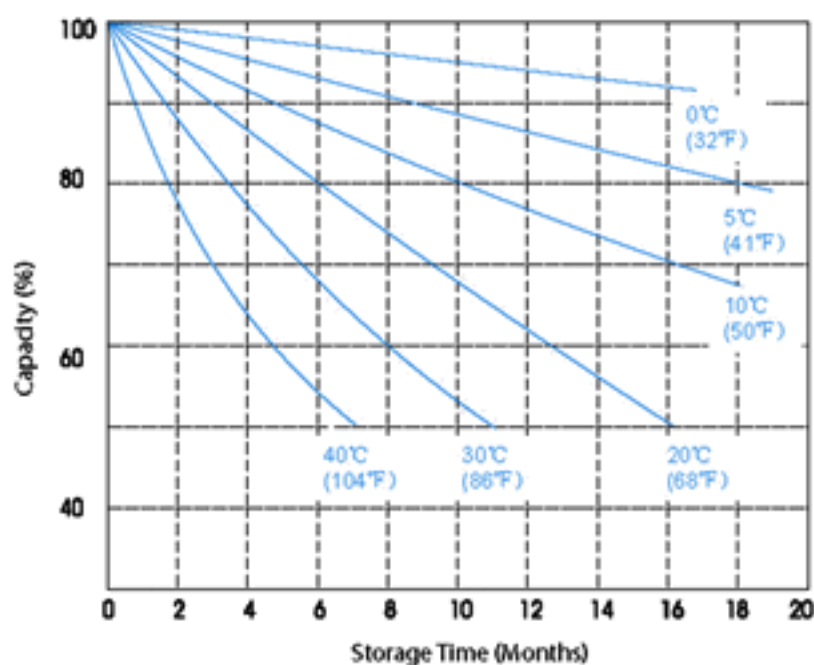
## Cycle service life in relation to depth of discharge



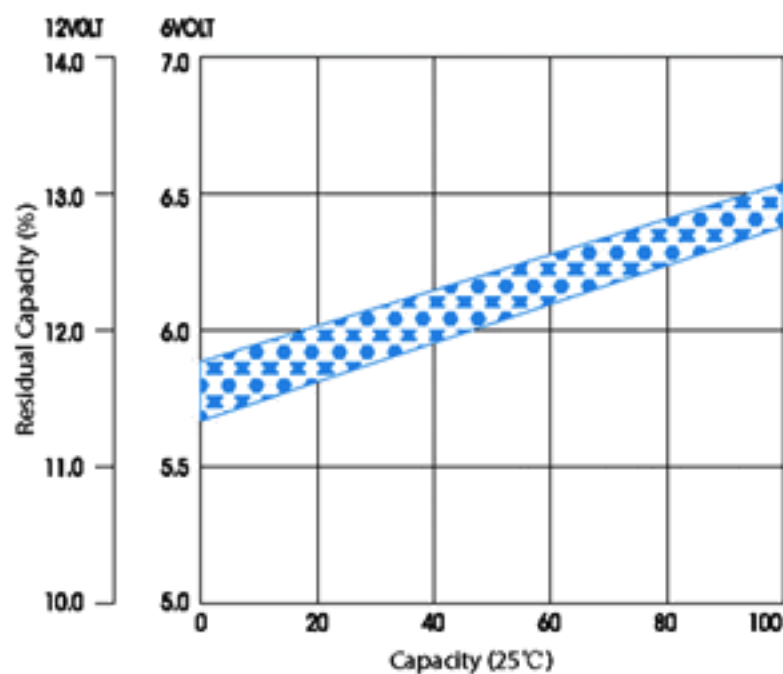
## Constant voltage charge characteristic



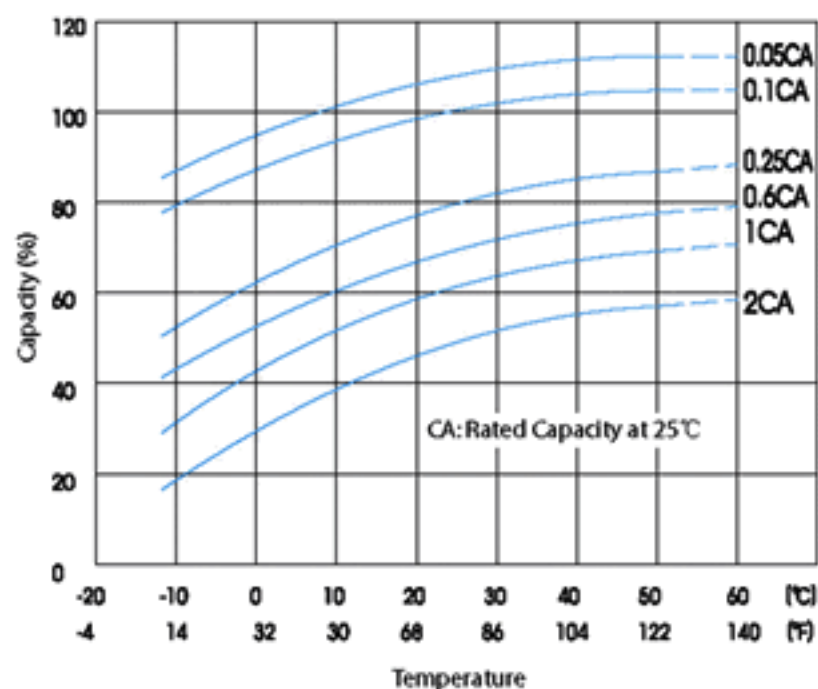
## Self-Discharge Characteristics



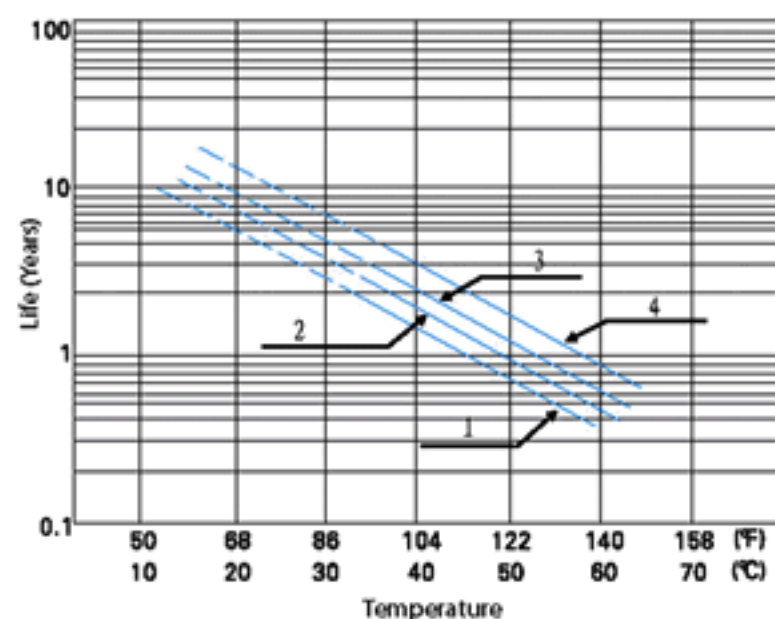
## Relationship of OCV and Residual Capacity % (25°C)



## Temperature effects on capacity

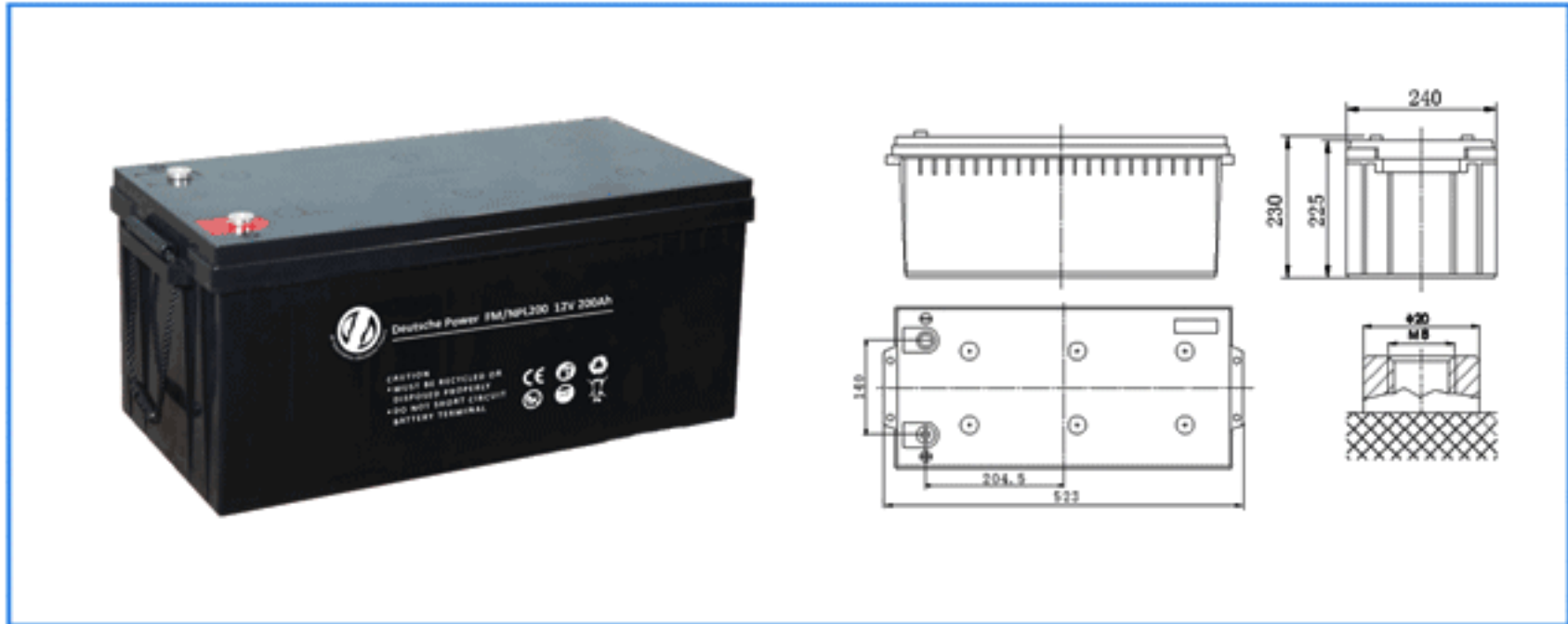


## Temperature effects float life



# FM/NPL200

FM/NPL Battery Series  
Solar Energy (Deep Cycle)



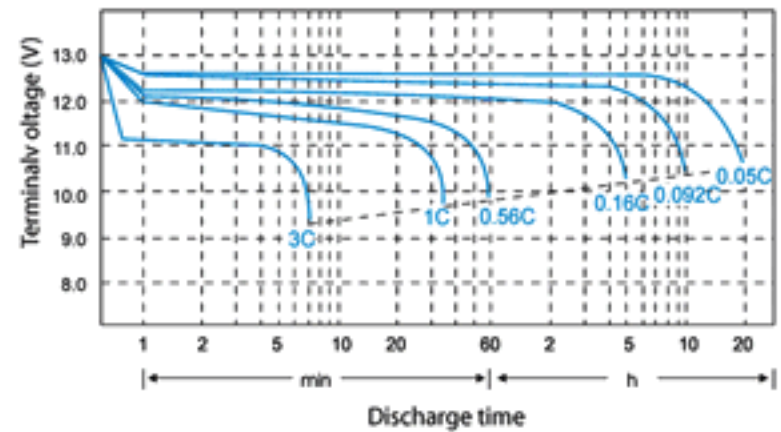
## Specifications

Nominal Voltage	12V	
Rated Capacity (20 hour rate)	200Ah	
Dimensions	Total Height (with terminals)	9.06 inches(230mm)
	Height	8.86 inches(225mm)
	length	20.59 inches(523mm)
	width	9.45 inches(240mm)
Weight	Approx.132.66 Pound(60.3kg)	

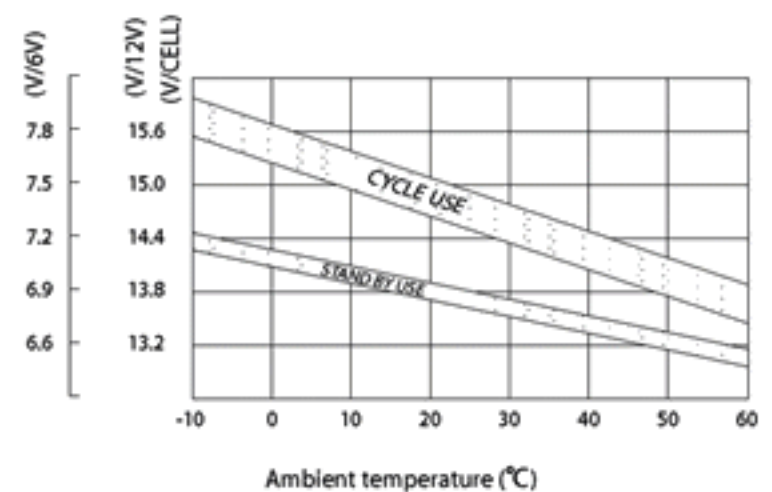
## Characteristics

Capacity 77°F (25°C)	20 hour rate (10.0A)	200 Ah
	10 hour rate (18.4A)	184 Ah
	5 hour rate (32.0A)	160 Ah
	1hour rate (120.0A)	120 Ah
	15Minute Rate (328A)	82.0 Ah
Internal Resistance	Full charged Battery 77°F (25°C)	3.0 M
	104°F (40°C)	102%
Capacity affected by Temperature (20hour rate)	77°F (25°C)	100%
	77°F (25°C)	32
	5°F (-15°C)	65%
Self-Discharge 77°F (25°C)	Capacity after 3 month storage	91%
	Capacity after 6 month storage	81%
	Capacity after 12 month storage	60%
Max. Discharge Current 77°F (25°C)	1333A(5S)	
Terminal	M3	
Charge (Constant Voltage)	Cycle	Initial Charging Current less than 30A Voltage 14.4~14.7V / 77°F (25°C)
	Float	Voltage 13.5~13.8V / 77°F (25°C)

## Discharge Curves 77°F (25°C)



## Relationship between charge voltage and temperature



## Constant Current Discharge (AMPERES @25°C)

F.V/Time	5Min	10Min	15Min	30Min	45Min	1Hour	2Hour	3Hour	5Hour	10Hour	24Hour
1.65	553	386	299	189	143	109	74.3	51.5	34.2	22.1	8.90
1.70	511	364	286	177	134	103	72.2	50.0	33.5	21.2	8.64
1.80	403	305	244	146	128	98	68.9	48.3	32.1	20.0	8.35

## Constant Power Discharge (WATTS PER CELL@25°C)

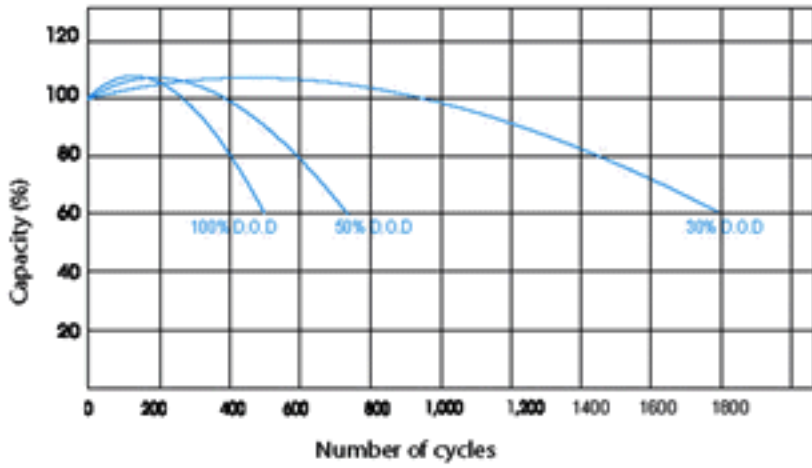
Cut off voltage (V/cell)	5min	10min	15min	30min	45min	1h	2h	3h	5h	10h	24h
1.60	985	697	545	349	263	231	138.0	95.8	63.2	37.3	15.8
1.65	965	691	541	343	260	228	136.0	94.6	63.0	36.8	15.6
1.67	961	685	540	338	256	223	135.0	94.0	62.8	36.2	15.5
1.70	908	672	529	331	252	219	134.0	93.2	62.6	36.0	15.4
1.75	836	629	499	296	250	216	133.0	92.8	62.0	35.1	15.3
1.80	751	584	469	281	246	211	130.0	92.1	61.4	34.4	15.1
1.85	601	485	410	257	226	207	124.0	89.3	57.2	32.8	14.8

# FM/NPL200

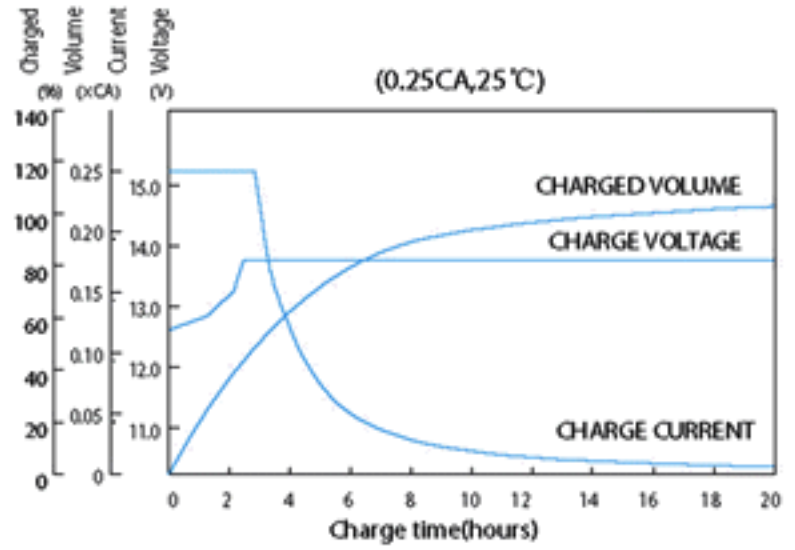
FM/NPL Battery Series  
Solar Energy (Deep Cycle)

The operating environment temperature above 40°C should be avoided. After long term storage, The battery actual capacity would be less than the rated capacity. Full capacity will be obtained through several charge/discharge cycles. To get the longest life, Deutsche Power battery should be fully charged before storage.

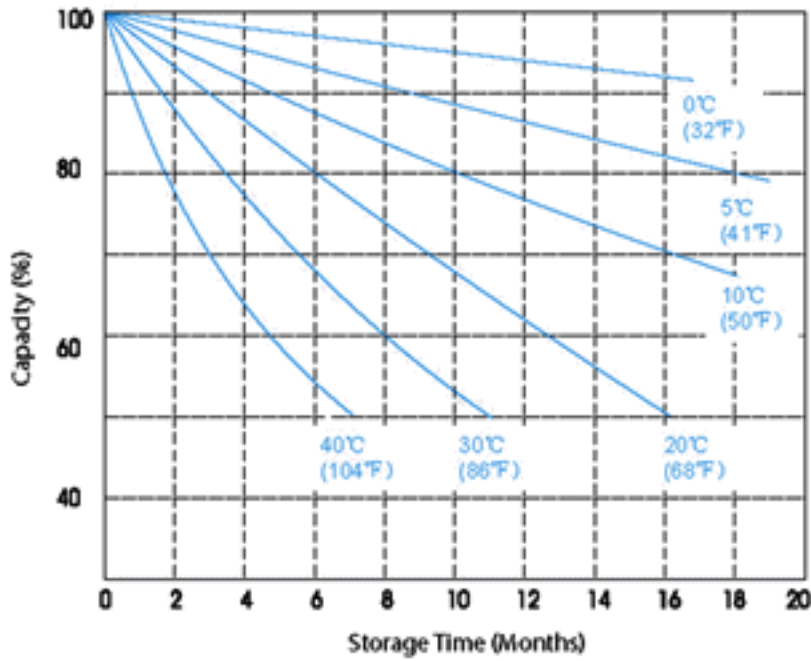
## Cycle service life in relation to depth of discharge



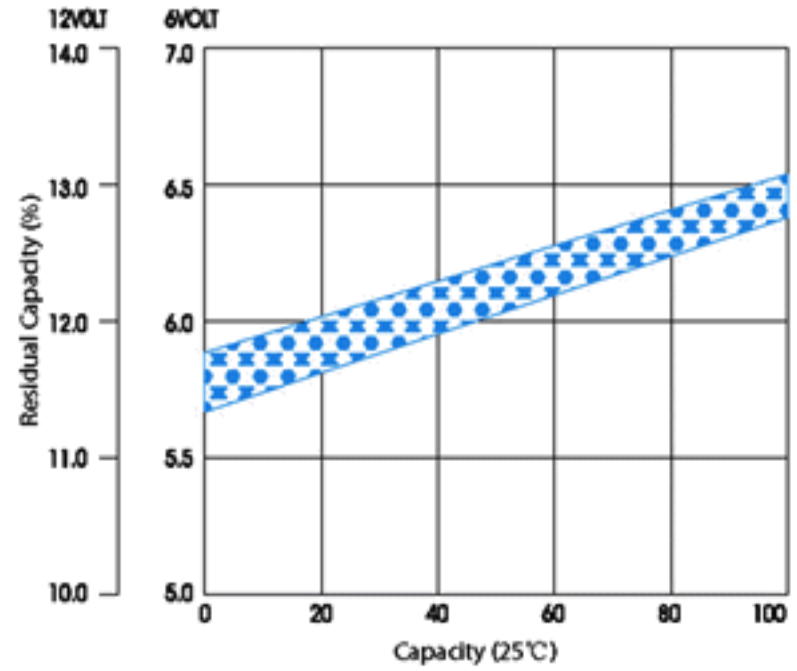
## Constant voltage charge characteristic



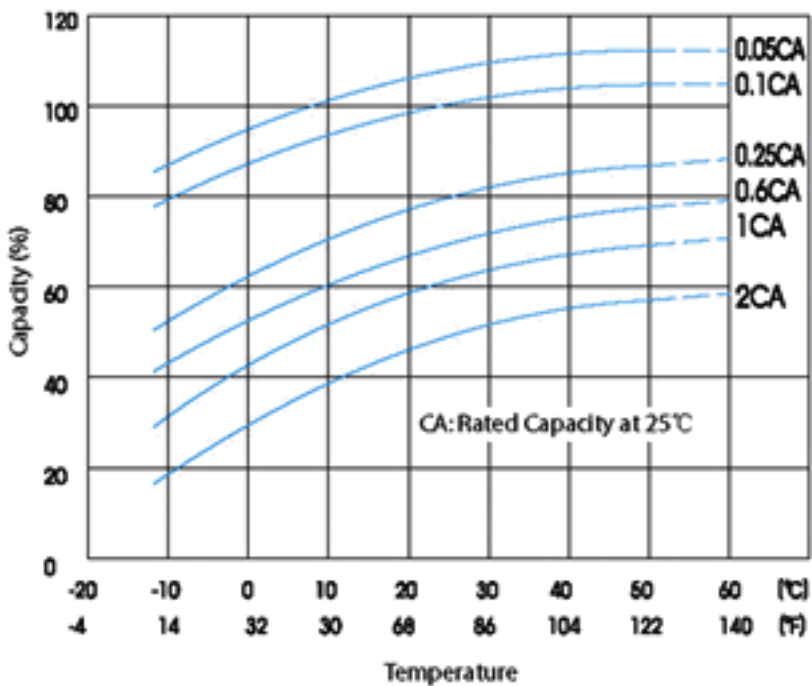
## Self-Discharge Characteristics



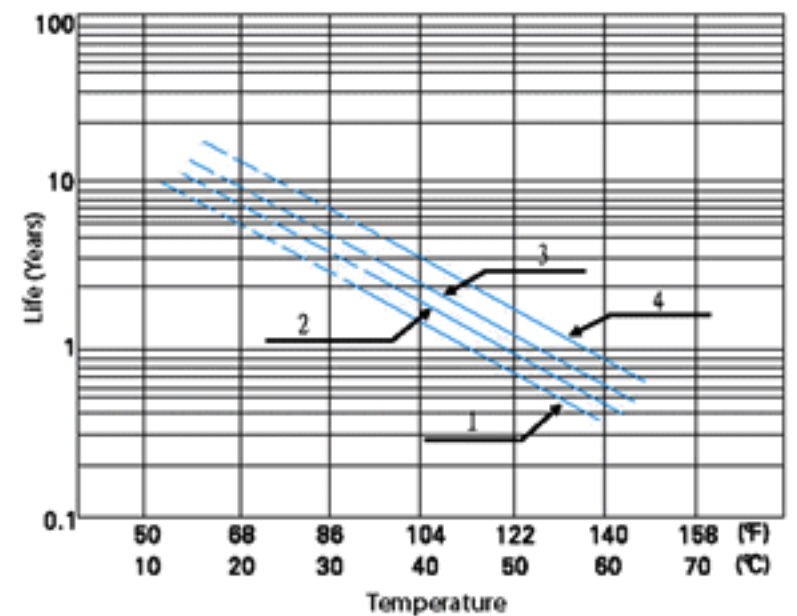
## Relationship of OCV and Residual Capacity % (25°C)



## Temperature effects on capacity

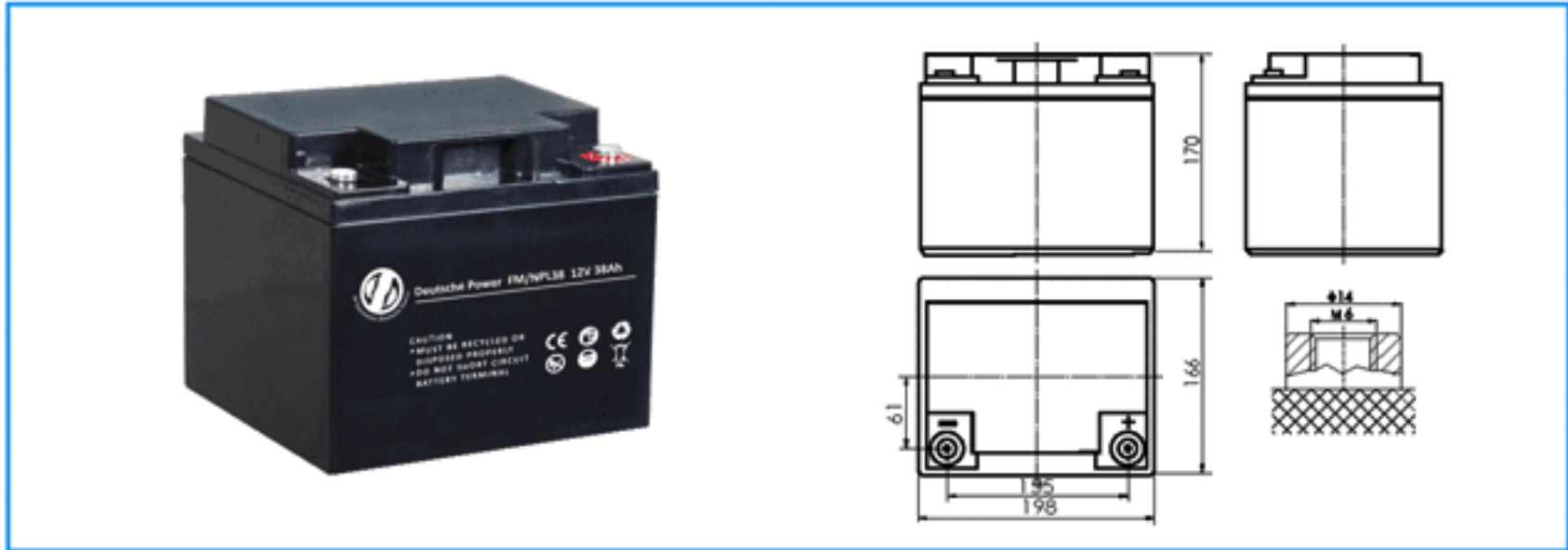


## Temperature effects float life



# FM/NPL38

FM/NPL Battery Series  
Solar Energy (Deep Cycle)



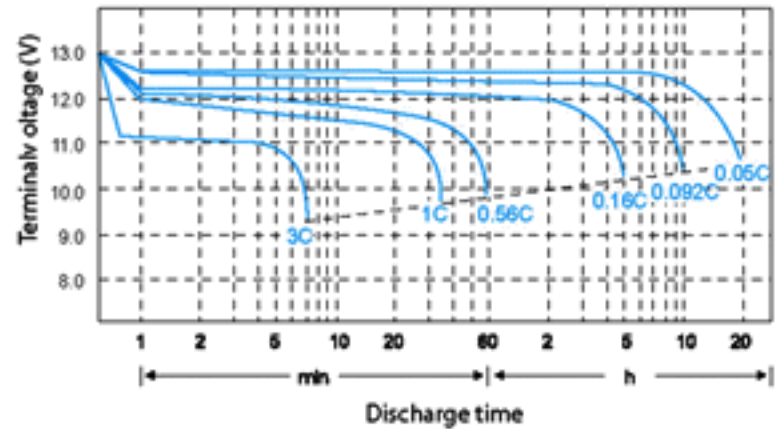
## Specifications

Nominal Voltage	12V	
Rated Capacity (20 hour rate)	38Ah	
Dimensions	Total Height (with terminals)	6.70inches (170mm)
	Height	6.70inches (170mm)
	length	7.80inches (198mm)
	width	6.54inches (166mm)
Weight	Approx. 26.4pound(12.0kg)	

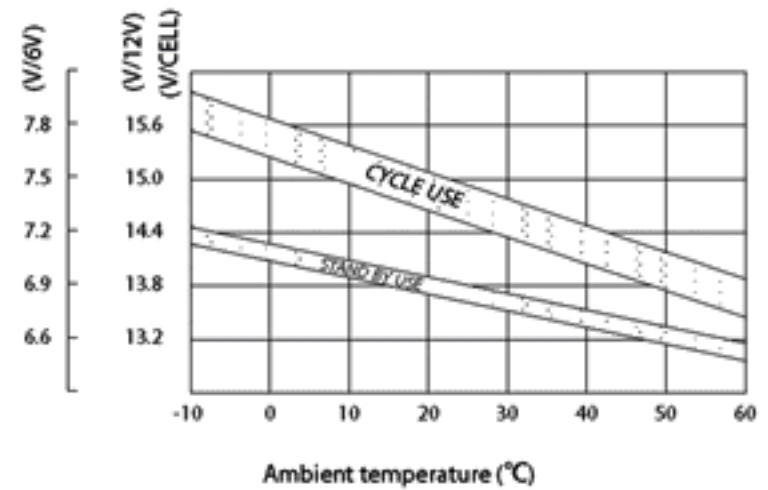
## Characteristics

Capacity 77°F (25°C)	20 hour rate (1.90A)	38.0Ah
	10 hour rate (3.42A)	34.2Ah
	5 hour rate (6.08A)	30.4Ah
	1 hour rate (22.8A)	22.8Ah
	15 minute Rate (62.7A)	15.7Ah
Internal Resistance	Full charged Battery 77°F(25°C)	8mΩ
Capacity affected by Temperature (20hour rate)	104°F(40°C)	102%
	77°F(25°C)	100%
	32°F(0°C)	85%
	5°F(-15°C)	65%
Self-Discharge 77°F (25°C)	Capacity after 3 month storage	91%
	Capacity after 6 month storage	81%
	Capacity after 12 month storage	60%
Max. Discharge Current 77°F (25°C)	380A(5S)	
Terminal	M1	
Charge (Constant Voltage)	Cycle	Initial Charging Current less than 11.4A Voltage 14.4~14.7V/77°F(25°C)
	Float	Voltage 13.5~13.8V/77°F(25°C)

## Discharge Curves 77°F (25°C)



## Relationship between charge voltage and temperature



## Constant Current Discharge (AMPERES @25°C)

F.V/Time	10Min	15Min	30Min	45Min	1Hour	2Hour	3Hour	5Hour	8Hour	10Hour	12Hour	24Hour
1.65	77.6	60.8	38.3	28.7	22.3	13.4	9.79	6.47	4.31	3.86	3.07	1.76
1.70	73.1	57.3	36.2	26.9	21.3	13.0	9.50	6.21	4.14	3.72	2.95	1.69
1.80	61.2	48.9	33.3	24.8	20.7	12.5	9.03	5.92	3.88	3.50	2.78	1.59

## Constant Power Discharge (WATTS PER CELL@25°C)

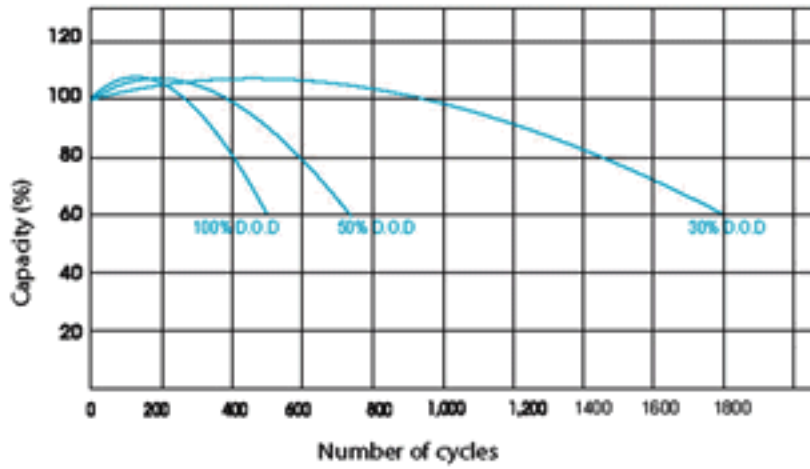
F.V/Time	10Min	15Min	30Min	45Min	1Hour	2Hour	3Hour	5Hour	8Hour	10Hour	12Hour	24Hour
1.60	143	113	70.2	52.7	44.6	25.3	18.0	12.1	8.00	6.76	5.79	2.92
1.65	139	110	69.7	52.3	43.2	24.5	17.8	11.9	7.94	6.70	5.70	2.90
1.67	137	108	68.8	51.3	42.6	24.4	17.7	11.8	7.86	6.62	5.64	2.87
1.70	135	106	67.6	50.4	41.9	24.2	17.5	11.6	7.75	6.56	5.57	2.81
1.75	127	102	67.4	49.6	41.6	24.0	17.4	11.5	7.68	6.50	5.42	2.76
1.80	117	94.1	64.1	47.8	40.9	23.6	17.0	11.3	7.42	6.28	5.32	2.68
1.85	96.9	82.7	58.3	45.4	38.0	22.7	16.5	10.7	7.21	6.00	5.12	2.60
1.90	82.0	73.4	54.0	43.7	35.8	22.1	16.1	9.7	6.73	5.63	4.73	2.64

# FM/NPL38

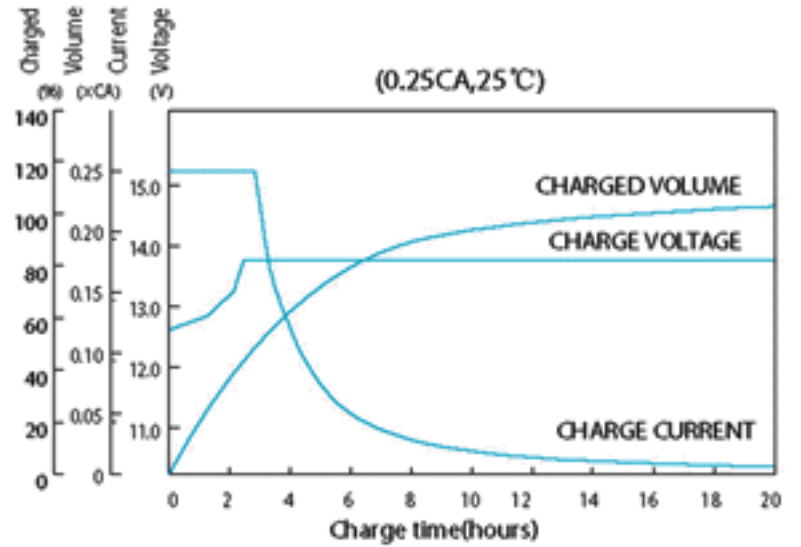
## FM/NPL Battery Series Solar Energy (Deep Cycle)

The operating environment temperature above 40°C should be avoided. After long term storage, the battery actual capacity would be less than the rated capacity. Full capacity will be obtained through several charge/discharge cycles. To get the longest life, Deutsche Power battery should be fully charged before storage.

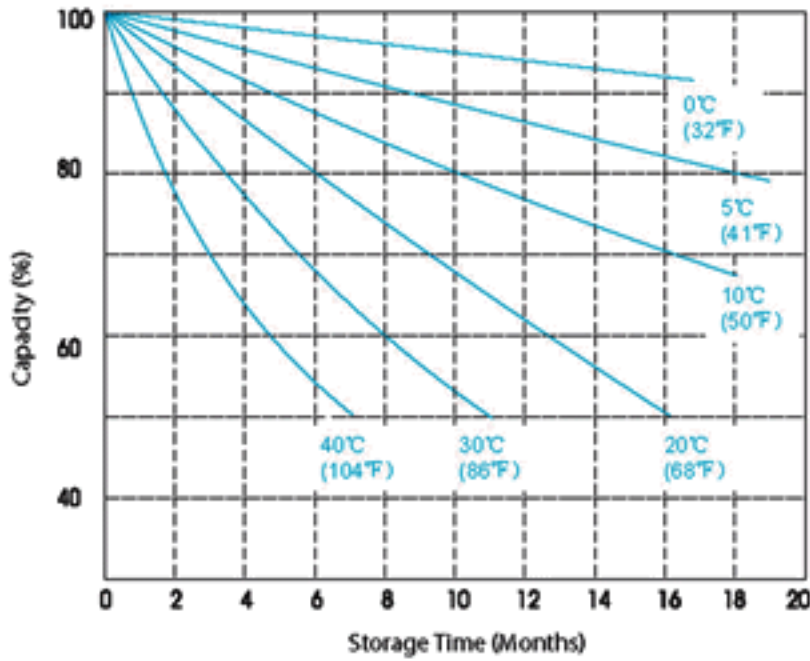
### Cycle service life in relation to depth of discharge



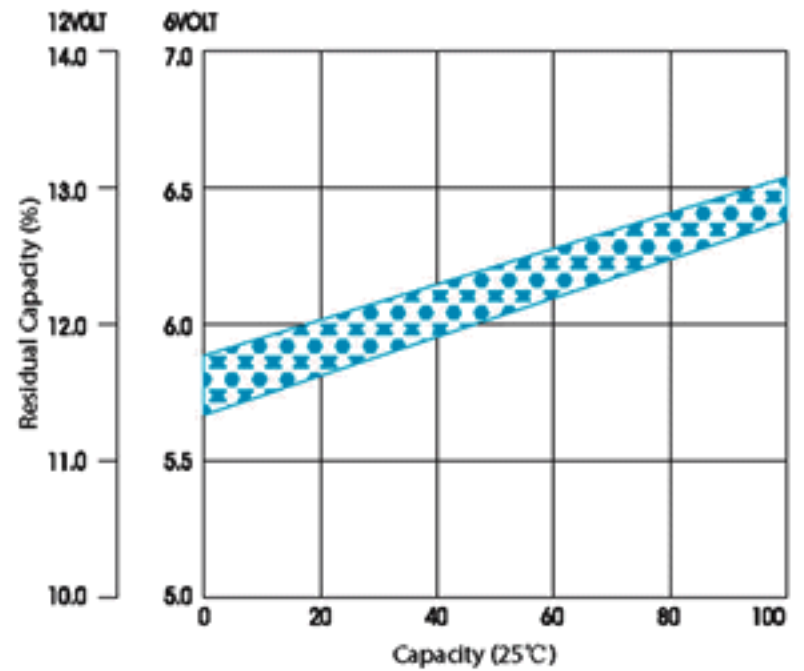
### Constant voltage charge characteristic



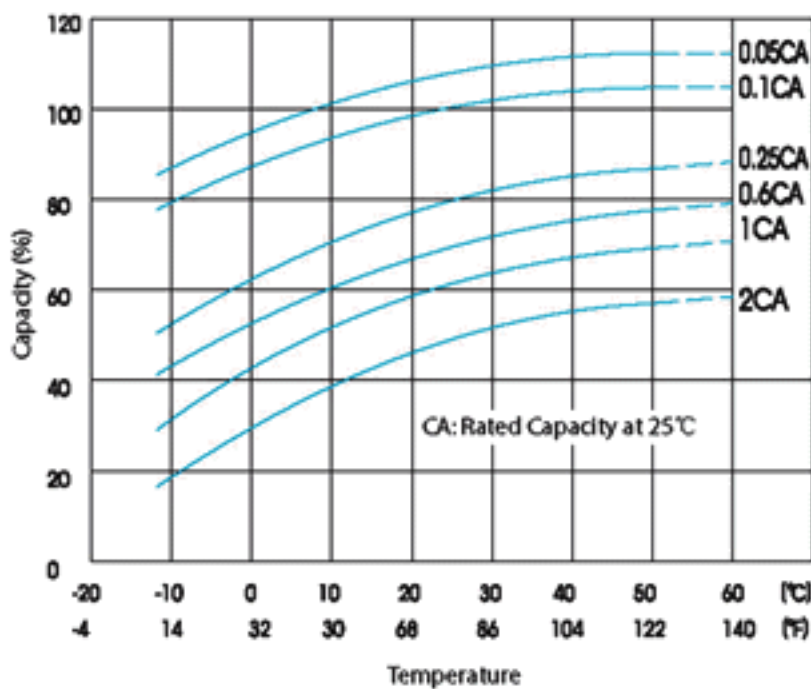
### Self-Discharge Characteristics



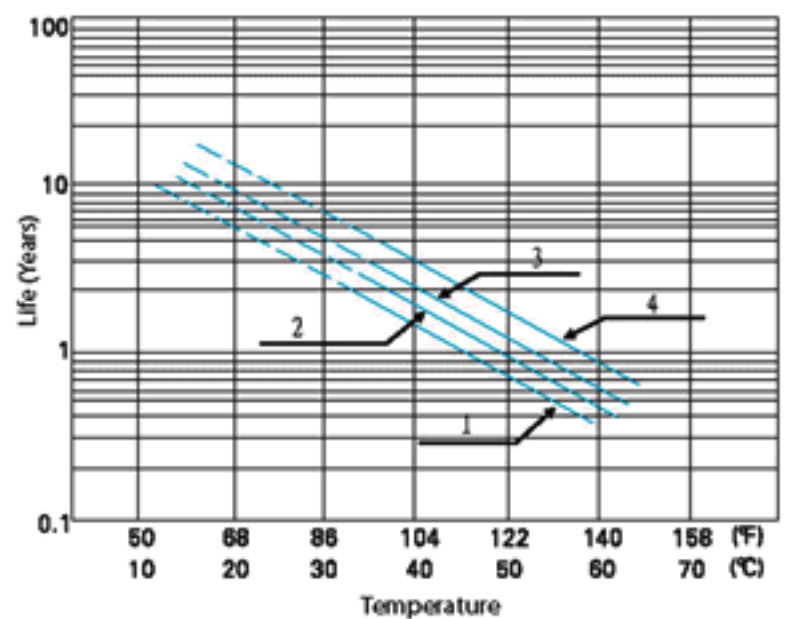
### Relationship of OCV and Residual Capacity % (25°C)



### Temperature effects on capacity



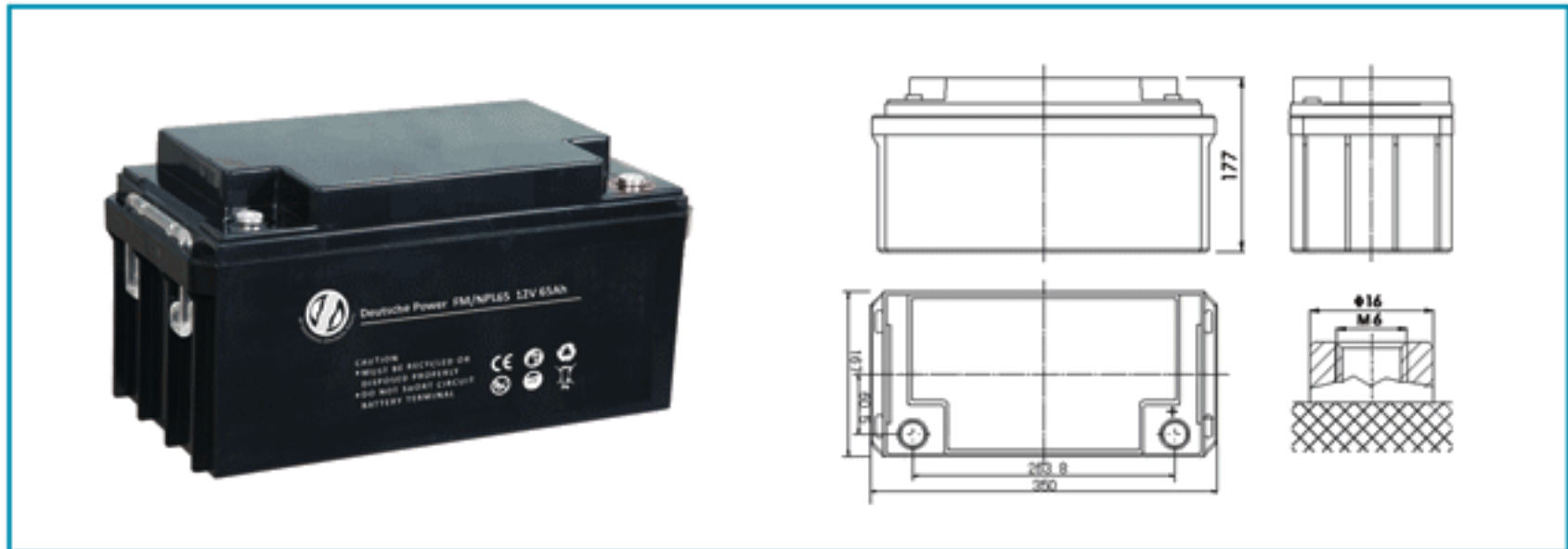
### Temperature effects float life





# FM/NPL65

FM/NPL Battery Series  
Solar Energy (Deep Cycle)



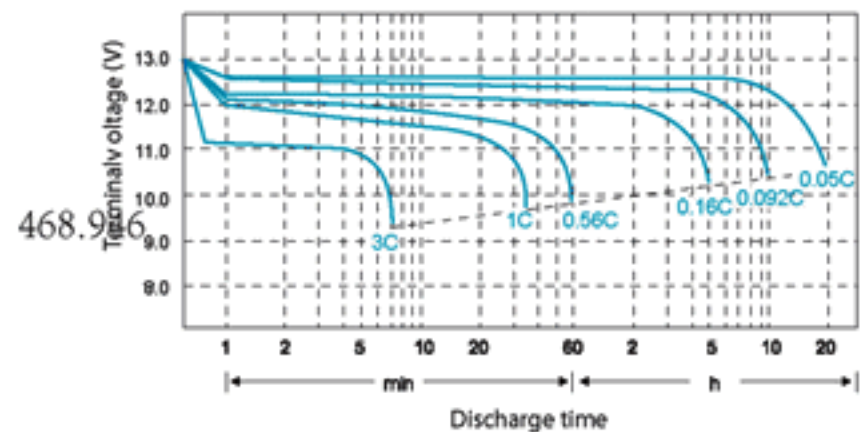
## Specifications

Nominal Voltage	12V	
Rated Capacity (20 hour rate)	65Ah	
Dimensions	Total Height (with terminals)	6.97inches (177mm)
	Height	6.97inches (177mm)
	length	13.8inches (350mm)
	width	6.57inches (167mm)
Weight	Approx. 44.0pound(20.0kg)	

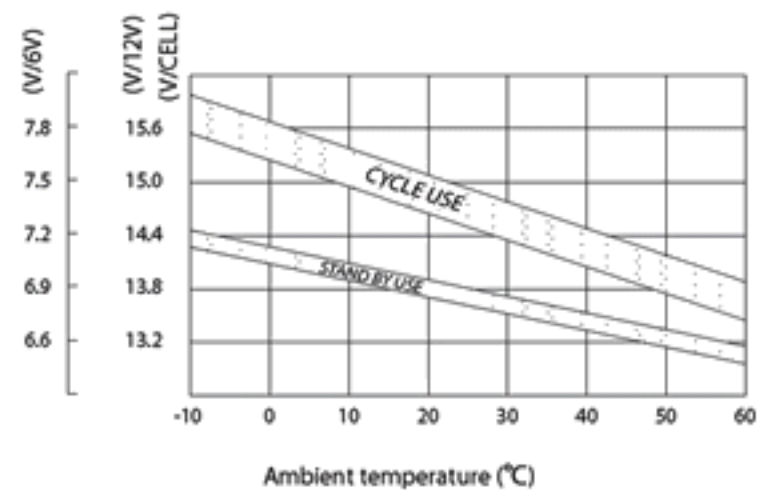
## Characteristics

Capacity 77°F (25°C)	20 hour rate (3.25A)	65Ah
	10 hour rate (6.10A)	61Ah
	5 hour rate (10.4A)	52Ah
	1 hour rate (39.0A)	39Ah
	15 minute Rate (107A)	26.8Ah
Internal Resistance	Full charged Battery 77°F(25°C)	7.5mΩ
Capacity affected by Temperature (20hour rate)	104°F(40°C)	102%
	77°F(25°C)	100%
	32°F(0°C)	85%
	5°F(-15°C)	65%
Self-Discharge 77°F (25°C)	Capacity after 3 month storage	91%
	Capacity after 6 month storage	81%
	Capacity after 12 month storage	60%
Max. Discharge Current 77°F (25°C)	650A(5S)	
Terminal	M2	
Charge (Constant Voltage)	Cycle	Initial Charging Current less than 19.5A Voltage 14.4~14.7V/77°F(25°C)
	Float	Voltage 13.5~13.8V/77°F(25°C)

## Discharge Curves 77°F (25°C)



## Relationship between charge voltage and temperature



## Constant Current Discharge (AMPERES @25°C)

F.V/Time	10Min	15Min	30Min	45Min	1Hour	2Hour	3Hour	5Hour	8Hour	10Hour	12Hour	24Hour
1.65	140	106	68.2	51.7	35.0	24.4	16.6	11.3	7.65	6.53	5.45	2.85
1.70	133	101	64.8	48.8	34.1	23.5	16.3	10.9	7.43	6.26	5.27	2.78
1.80	112	88.4	54.0	46.1	33.6	22.5	15.3	10.5	7.06	5.98	5.04	2.72

## Constant Power Discharge (WATTS PER CELL@25°C)

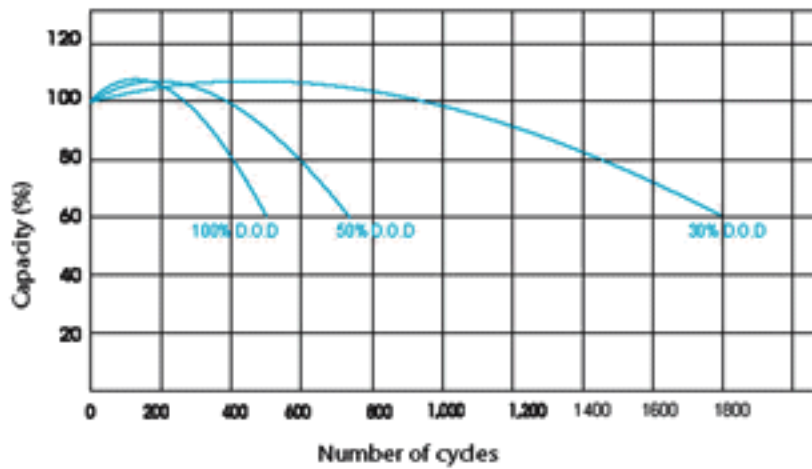
F.V/Time	10Min	15Min	30Min	45Min	1Hour	2Hour	3Hour	5Hour	8Hour	10Hour	12Hour	24Hour
1.60	254	194	127	95.2	77.2	45.3	31.8	20.9	14.2	11.8	10.2	5.35
1.65	251	192	124	94.3	76.4	44.7	31.5	20.7	14.1	11.6	10.1	5.33
1.67	250	190	123	92.9	75.6	44.2	31.4	20.6	14	11.5	10.0	5.31
1.70	246	187	121	91.5	75.0	43.6	31.2	20.3	13.9	11.3	9.94	5.29
1.75	230	182	111	90.0	74.8	43.1	30.8	20.1	13.8	11.2	9.88	5.27
1.80	214	170	104	89.0	74.4	42.4	30.1	20	13.5	11.0	9.65	5.25
1.85	177	149	96.0	82.1	69.2	41.4	29.7	19.1	13.0	10.9	9.42	4.95
1.90	146	131	89	76	64.4	40.4	29.3	18.2	12.5	10.8	9.20	4.67

# FM/NPL65

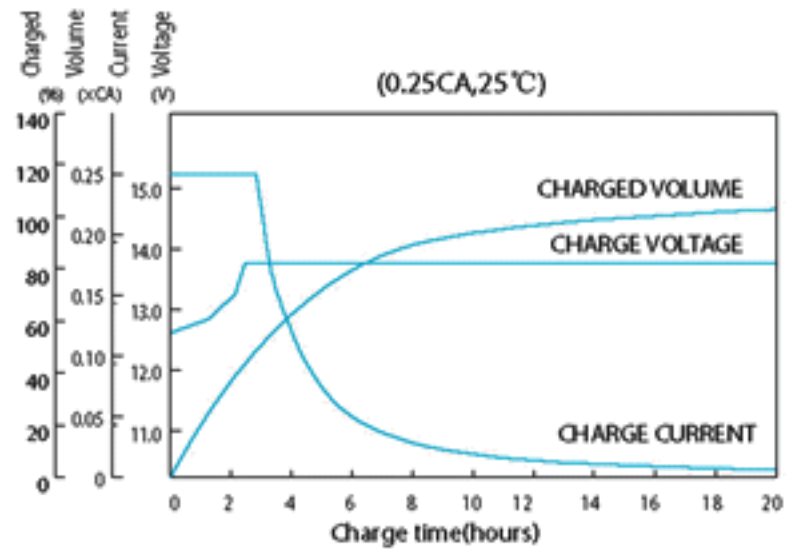
## FM/NPL Battery Series Solar Energy (Deep Cycle)

The operating environment temperature above 40°C should be avoided. After long term storage, The battery actual capacity would be less than the rated capacity. Full capacity will be obtained through several charge/discharge cycles. To get the longest life, Deutsche Power battery should be fully charged before storage.

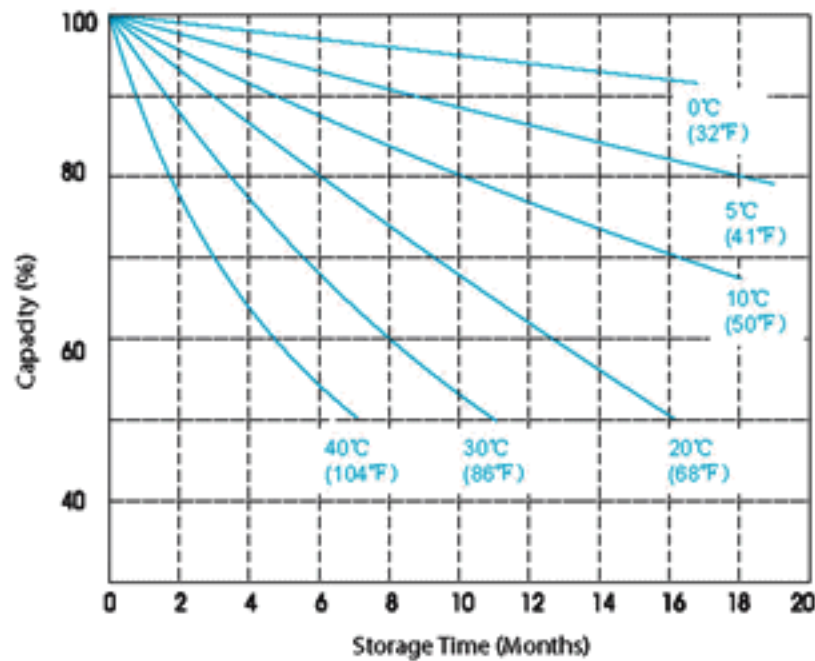
### Cycle service life in relation to depth of discharge



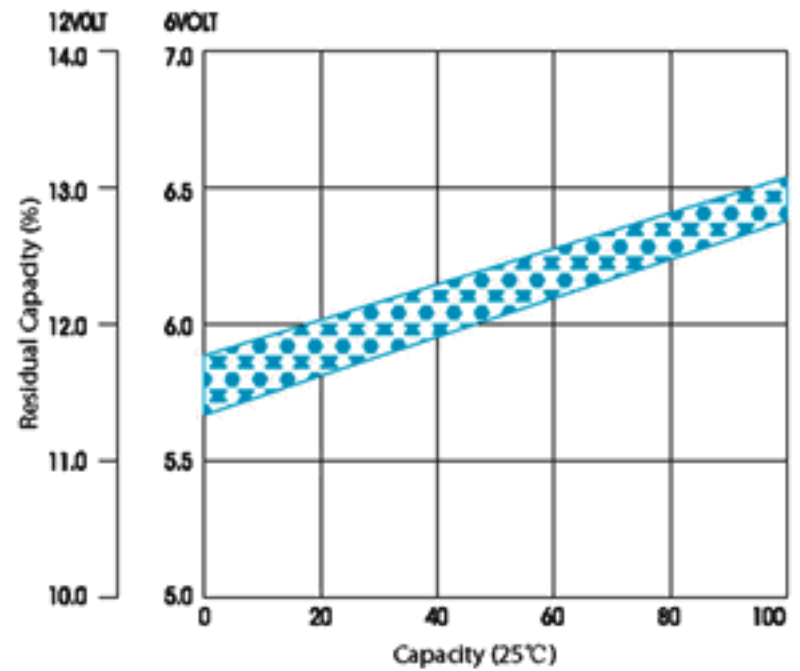
### Constant voltage charge characteristic



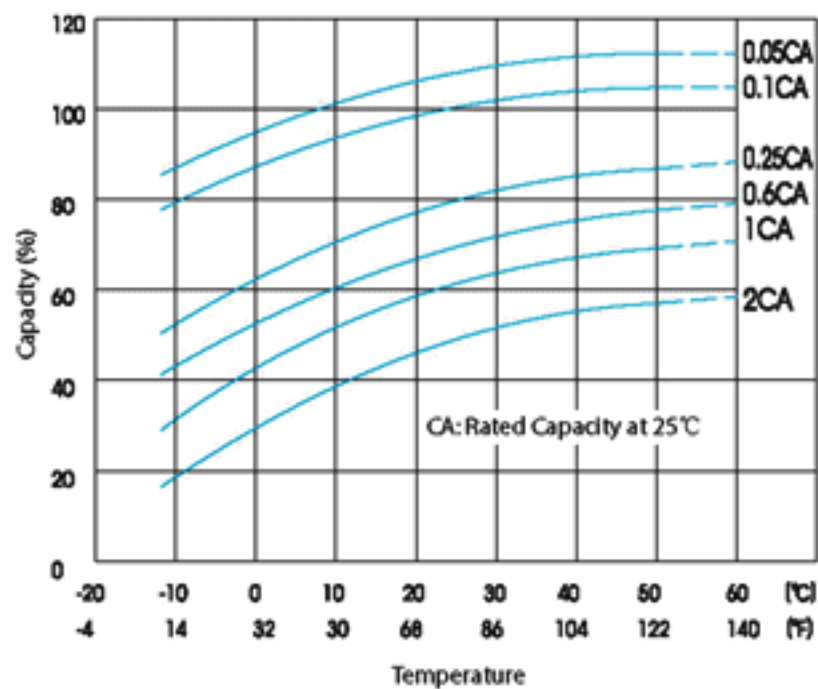
### Self-Discharge Characteristics



### Relationship of OCV and Residual Capacity % (25°C)



### Temperature effects on capacity



### Temperature effects float life

