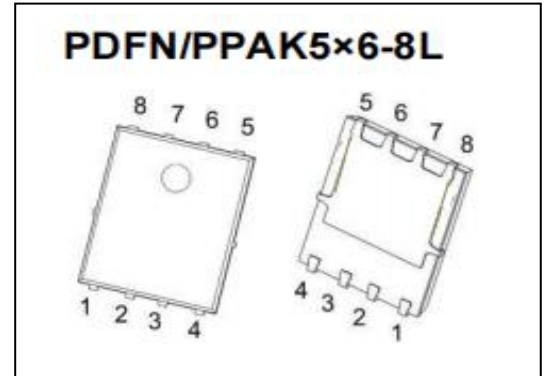




PDFN/PPAK5×6-8L Plastic-Encapsulate MOSFETS

CCME50N06S N-Channel Power MOSFET

V_{DS}	$R_{DS(ON)}$ (Typ.)	I_D
60 V	7.5mΩ@10V 10mΩ@4.5V	50A



DESCRIPTION

The CCME50N06S provides excellent $R_{DS(ON)}$ with low gate charge. It can be used in a wide variety of applications.

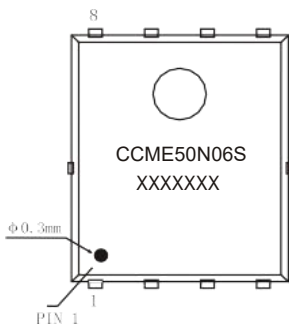
FEATURES

- High density cell design for ultra low $R_{DS(ON)}$
- Repetitive avalanche rated
- AEC Q101 Qualified

APPLICATIONS

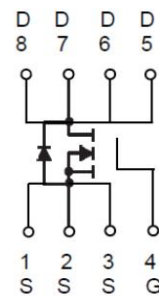
- 12V/24V Automotive systems
- Motors, lamps and solenoid control
- Transmission control
- High-frequency switching and synchronous rectification

MARKING



CCME50N06S =Part No.
XXXXXXX = Code.

EQUIVALENT CIRCUIT



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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	50	A
Pulsed Drain Current	I_{DM}	200	A
Single Pulse Avalanche Energy ¹	E_{AS}	110	mJ
Total Power Dissipation	P_D	52	W
Thermal Resistance from Junction to Case	$R_{\theta JC}$	2.9	$^{\circ}\text{C}/\text{W}$
Junction Temperature	T_J	175	$^{\circ}\text{C}$
Storage Temperature	T_{STG}	-55~ +175	$^{\circ}\text{C}$
Soldering Temperature , for 10S(1.6mm from case)	-	260	$^{\circ}\text{C}$

Notes:

1.EAS condition: $T_J=25^{\circ}\text{C}$, $V_{DD}=30\text{V}$, $L=0.5\text{mH}$, $R_G=25\Omega$, $I_{AS}=21\text{A}$, Starting $T_J=25^{\circ}\text{C}$.

MOSFET ELECTRICAL CHARACTERISTICS

TC=25°C unless otherwise specified

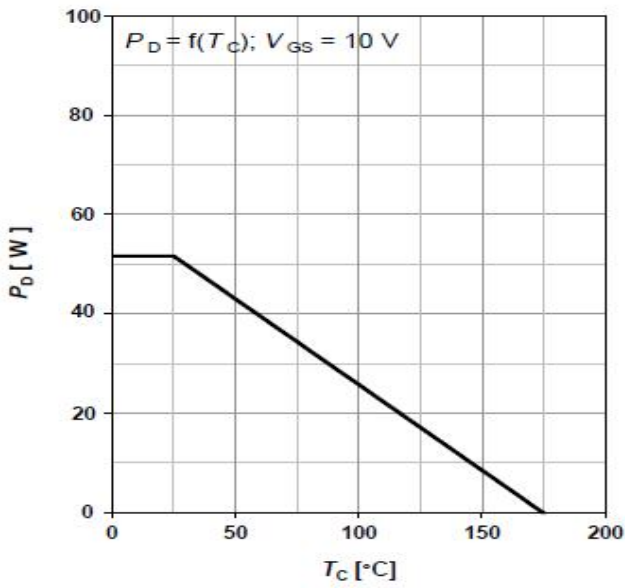
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Off characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	60			V
Zero gate voltage drain current	I_{DSS}	$V_{DS} = 60V, V_{GS} = 0V$		0.1	1	μA
Gate-body leakage current	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 20V$		2	± 100	nA
On characteristics⁴						
Gate-threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1.5	1.7	2.5	V
Static drain-source on-state resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 20A$		7.5	10	m Ω
		$V_{GS} = 4.5V, I_D = 20A$		10	14	m Ω
Forward transconductance	g_{fs}	$V_{DS} = 10V, I_D = 10A$		65		S
Dynamic characteristics³⁴						
Input capacitance	C_{iss}	$V_{DS} = 25V, V_{GS} = 0V,$ $f = 1MHz$		1560		pF
Output capacitance	C_{oss}			351		
Reverse transfer capacitance	C_{rss}			25		
Gate resistance	R_g	$f = 1MHz$		1.7		Ω
Switching characteristics³⁴						
Total gate charge	Q_g	$V_{GS} = 10V, V_{DD} = 32V,$ $I_D = 10A$		26		nC
Gate-source charge	Q_{gs}			6		
Gate-drain charge	Q_{gd}			13		
Turn-on delay time	$t_{d(on)}$	$V_{DD} = 32V, I_D = 1A,$ $V_{GS} = 10V, R_G = 3.3\Omega$		16		ns
Turn-on rise time	t_r			20		
Turn-off delay time	$t_{d(off)}$			38		
Turn-off fall time	t_f			16		
Drain-Source Diode Characteristics						
Drain-source diode forward voltage ⁴	V_{SD}	$V_{GS} = 0V, I_S = 1A$		0.7	1.3	V
Continuous drain-source diode forward Current ¹	I_S	-			50	A
Pulsed drain-source diode forward current ²	I_{SM}	-			200	A
Reverse recovery time	T_{rr}	$I_F = 10A, di/dt = 100A/\mu s$		32		ns
Reverse recovery charge	Q_{rr}			26		nC

Note :

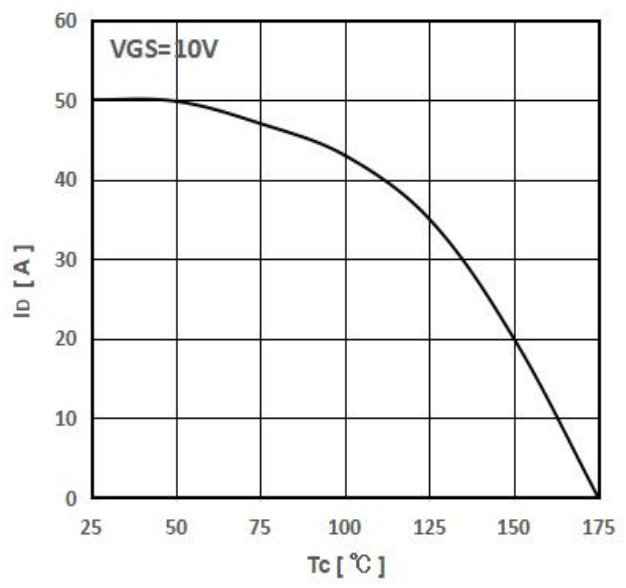
1. $T_C = 25^\circ C$ Limited only by maximum temperature allowed.
2. $P_w \leq 10\mu s$, Duty cycle $\leq 1\%$.
3. Guaranteed by design, not subject to production.
4. Pulse Test : Pulse Width $\leq 300\mu s$, duty cycle $\leq 2\%$.

Typical Characteristics

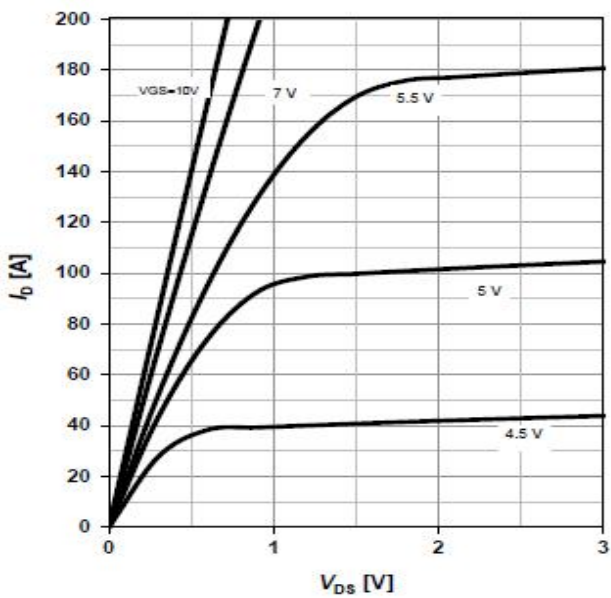
PD -- Tc



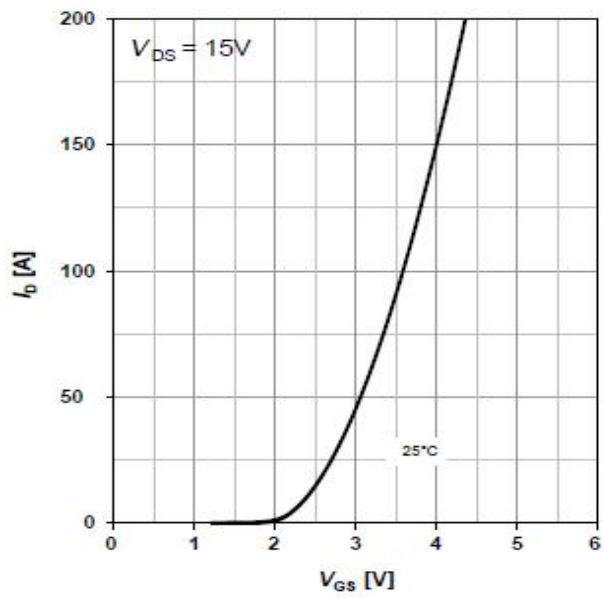
ID -- Tc



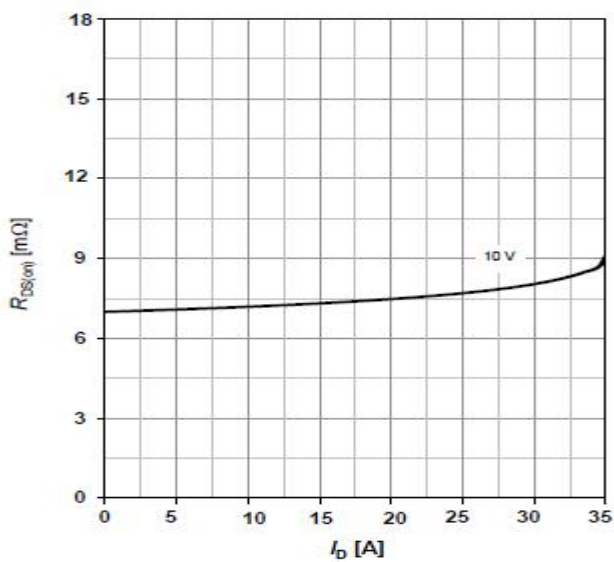
ID -- VDS



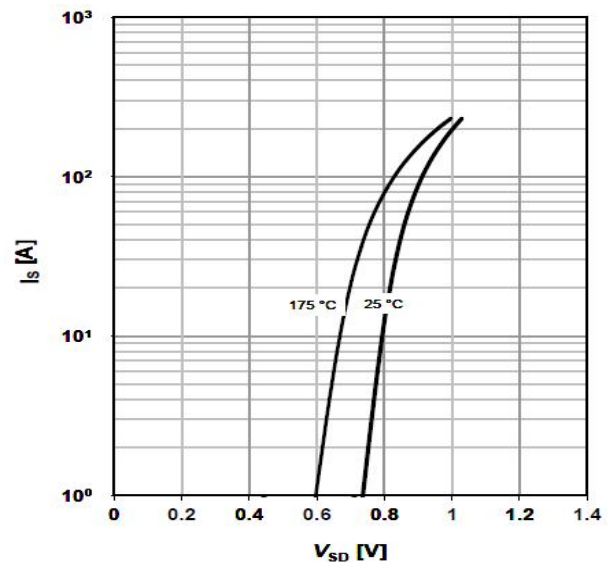
ID -- VGS



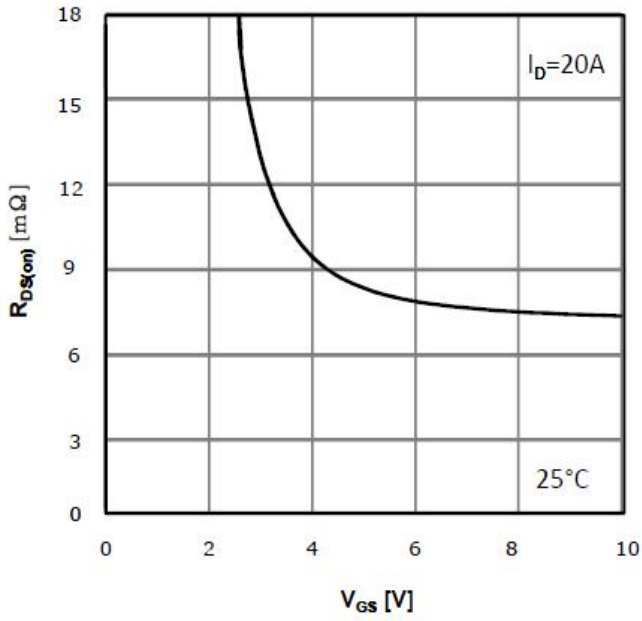
RDS(on) -- ID



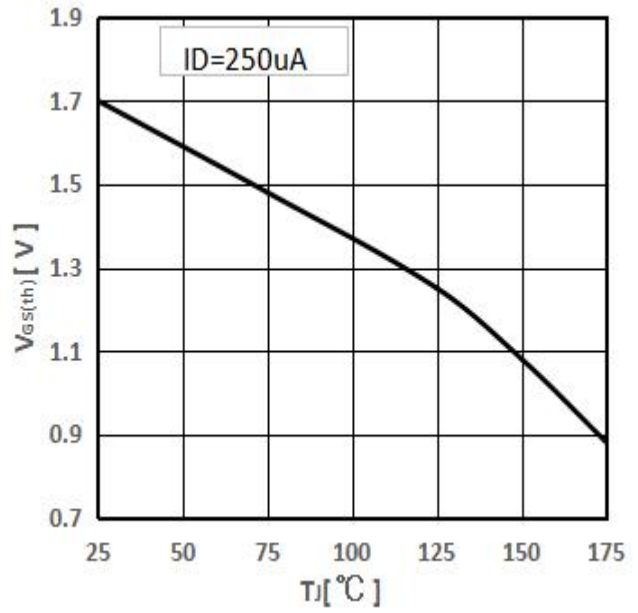
IS -- VSD



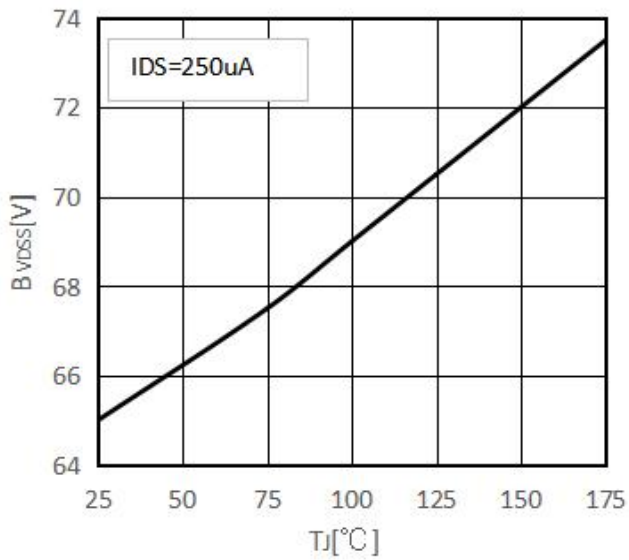
RDS(on) -- VGS



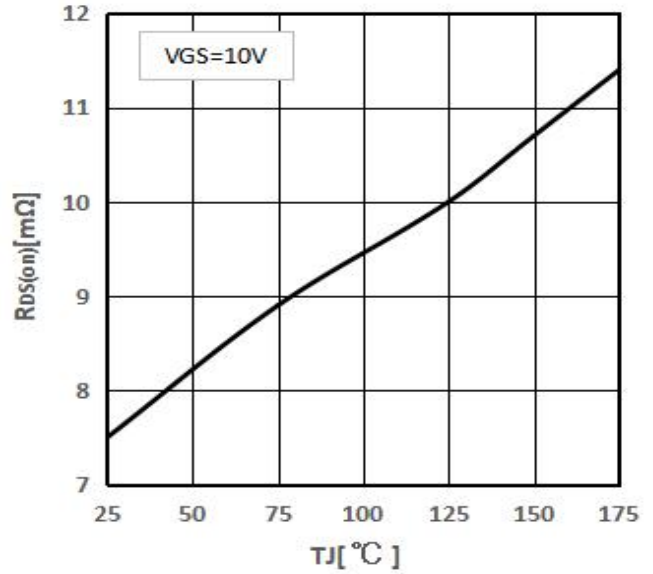
Threshold Voltage



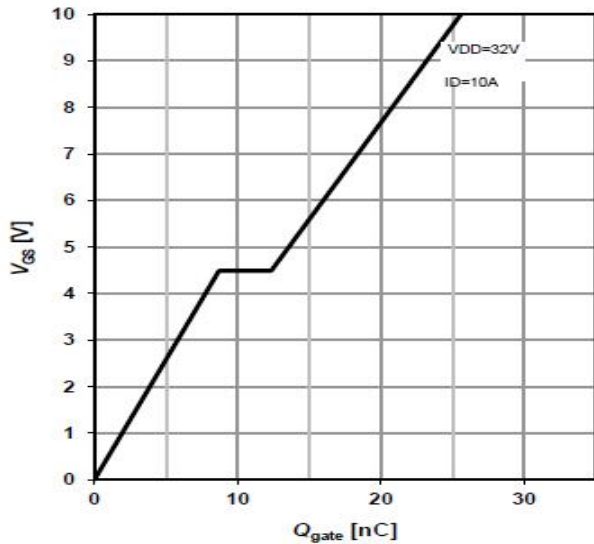
Drain-source breakdown voltage



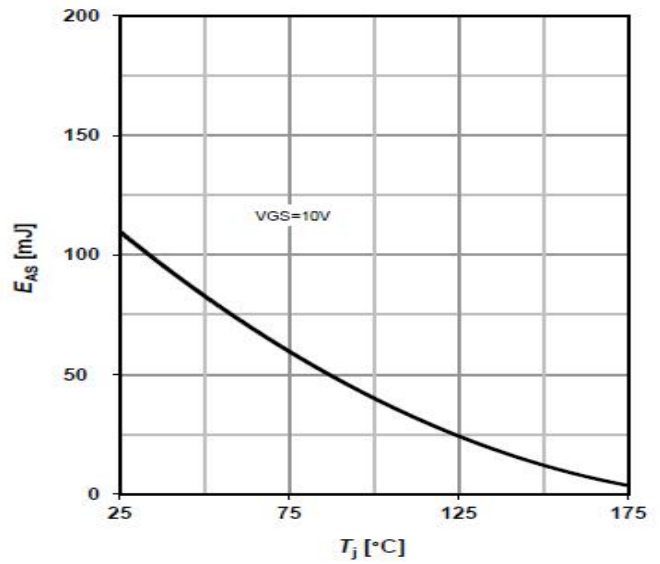
RDS (on) -- Tj



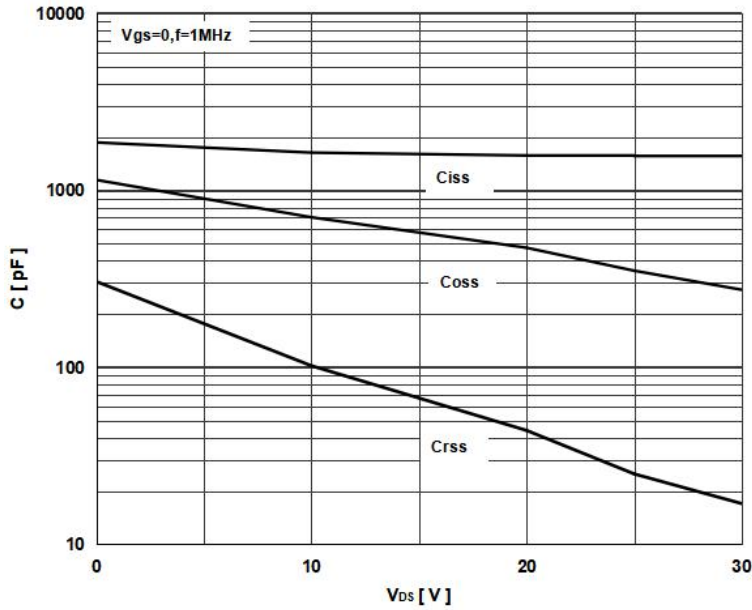
Typ.gate charge



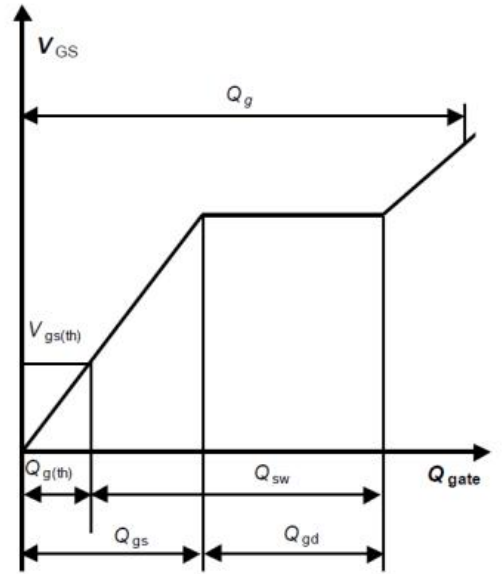
Avalanche energy



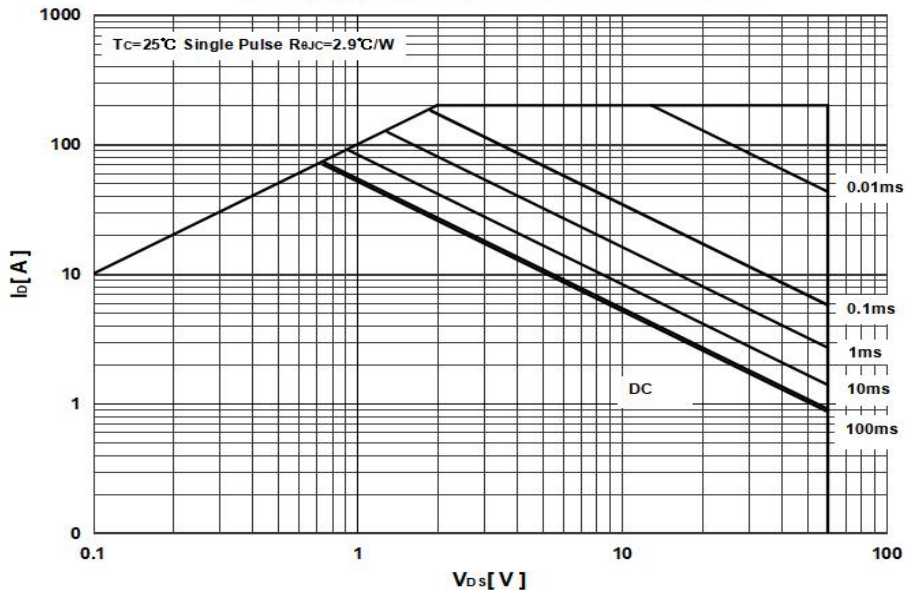
Typ. capacitance



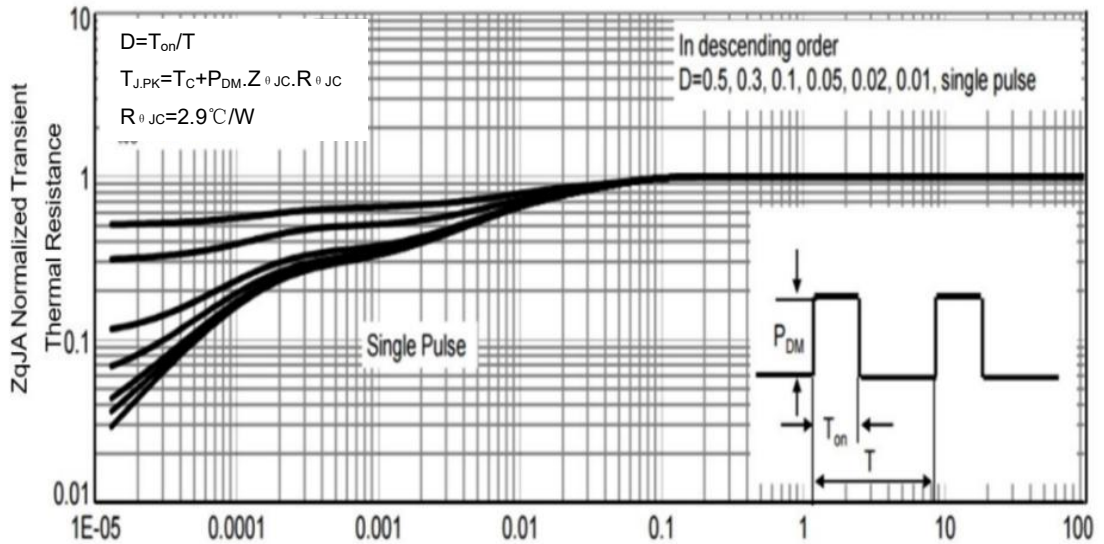
Gate charge waveforms



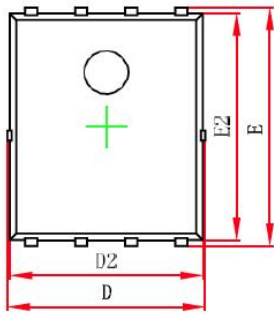
Maximum Forward Biased Safe Operating Area



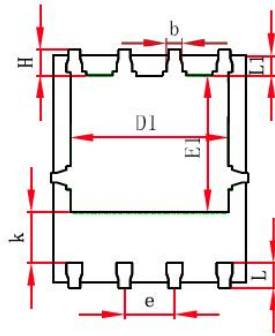
Normalized Thermal Transient Impedance



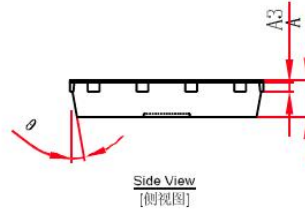
PDFN/PPAK5×6-8L Package Outline Dimensions



Top View
[顶视图]



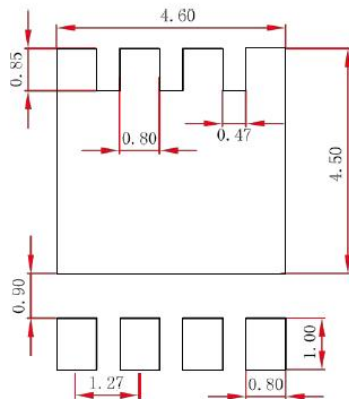
Bottom View
[背视图]



Side View
[侧视图]

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.000	0.035	0.039
A3	0.254REF.		0.010REF.	
D	4.944	5.096	0.195	0.201
E	5.974	6.126	0.235	0.241
D1	3.910	4.110	0.154	0.162
E1	3.375	3.575	0.133	0.141
D2	4.824	4.976	0.190	0.196
E2	5.674	5.826	0.223	0.229
k	1.190	1.390	0.047	0.055
b	0.350	0.450	0.014	0.018
e	1.270TYP.		0.050TYP.	
L	0.559	0.711	0.022	0.028
L1	0.424	0.576	0.017	0.023
H	0.574	0.726	0.023	0.029
θ	10°	12°	10°	12°

PDFN/PPAK5*6-8L Suggested Pad Layout



- Note:
1. Controlling dimension: in millimeters.
 2. General tolerance: $\pm 0.05\text{mm}$.
 3. The pad layout is for reference purposes only.

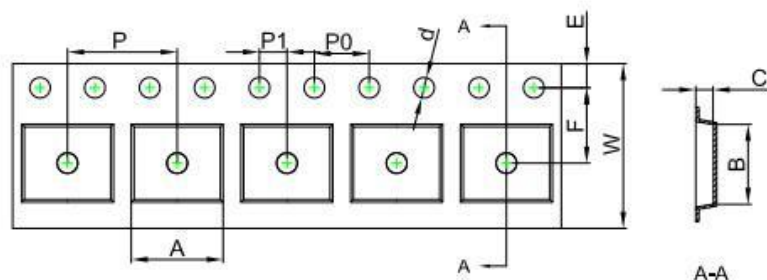
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PDFN/PPAK5*6-8L Tape and Reel

PDFN/PPAK5*6-8L Embossed Carrier Tape



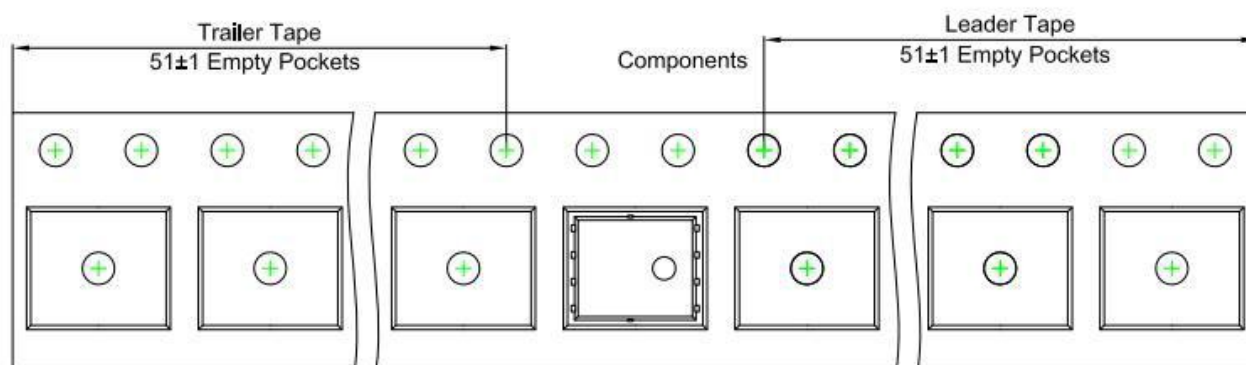
Packaging Description:

PDFN/PPAK5*6-8L parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 5,000 units per 13" or 33.0 cm diameter reel. The reels are clear in color and is made of polystyrene plastic (anti-static coated).

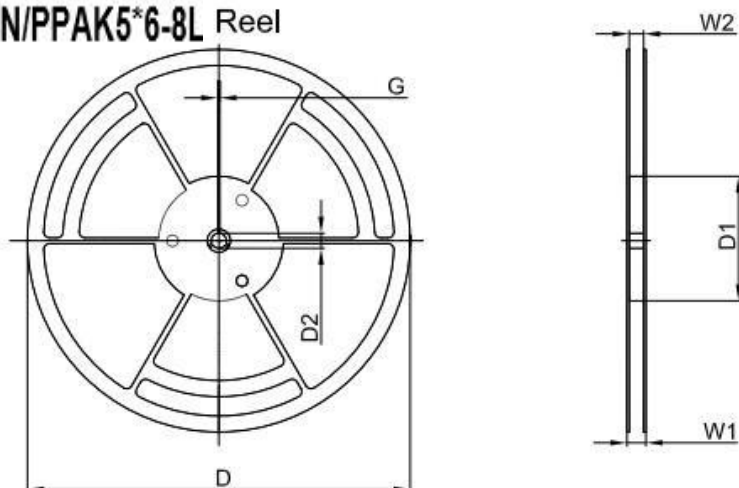
Dimensions are in millimeter

Pkg type	A	B	C	d	E	F	P0	P	P1	W
PDFN/PPAK5*6-8L	6.30	5.30	1.10	Ø1.50	1.75	5.50	4.00	8.00	2.00	12.00

PDFN/PPAK5*6-8L Tape Leader and Trailer



PDFN/PPAK5*6-8L Reel



Dimensions are in millimeter

Reel Option	D	D1	D2	G	W1	W2
13"D1a	Ø330,00	100,00	13,00	1,90	17,60	12,40

REEL	Reel Size	Box	Box Size(mm)	Carton	Carton Size(mm)
5,000 pcs	13 inch	5,000 pcs	340×336×29	50,000 pcs	353×346×365

Date of change	Rev #	revise content
2022/12/05	A/0	/