



Features

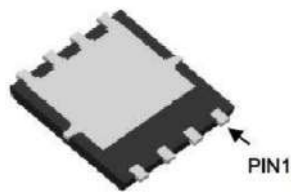
- Very Low On-resistance $R_{DS(ON)}$
- Low C_{rss}
- Fast switching
- 100% avalanche tested
- Improved dv/dt capability

Product Summary

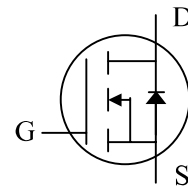
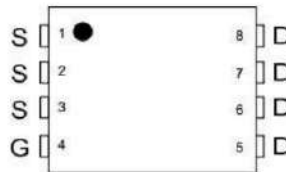
V_{DS}	30	V
$R_{DS(on),Max}@ V_{GS}=10\text{ V}$	14	mΩ
I_D	35	A

Application

- PWM Application
- Load Switch
- Power Management



PDFN3.3x3.3-8



Absolute Maximum Ratings

$T_C = 25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	ASDM30N35AE	Units
V_{DSS}	Drain-Source Voltage	30	V
I_D	Drain Current - Continuous ($T_C = 25^\circ\text{C}$)	35	A
	- Continuous ($T_C = 100^\circ\text{C}$)	13	A
I_{DM}	Drain Current - Pulsed (Note 1)	140	A
V_{GSS}	Gate-Source Voltage	± 20	V
E_{AS}	Single Pulsed Avalanche Energy	56	mJ
P_D	Power Dissipation ($T_C = 25^\circ\text{C}$)	4.5	W
$R_{\theta JC}$	Thermal Resistance, Junction to Case	27.8	$^\circ\text{C/W}$
T_J, T_{STG}	Operating and Storage Temperature Range	-55 to +150	$^\circ\text{C}$
T_L	Maximum lead temperature for soldering purposes,	300	$^\circ\text{C}$

Electrical Characteristics

 $T_C = 25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
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Off Characteristics

BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS} = 0\text{ V}, I_D = 250\text{ }\mu\text{A}$	30	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = 30\text{ V}, V_{GS} = 0\text{ V}$	--	--	1	μA
I_{GSSF}	Gate-Body Leakage Current, Forward	$V_{GS} = 20\text{ V}, V_{DS} = 0\text{ V}$	--	--	100	nA
I_{GSSR}	Gate-Body Leakage Current, Reverse	$V_{GS} = -20\text{ V}, V_{DS} = 0\text{ V}$	--	--	-100	nA

On Characteristics

$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\text{ }\mu\text{A}$	1.0	1.6	2.2	V
$R_{DS(on)}$	Static Drain-Source On-Resistance	$V_{GS} = 10\text{ V}, I_D = 20\text{ A}$	--	--	14	$\text{m}\Omega$
		$V_{GS} = 4.5\text{ V}, I_D = 10\text{ A}$	--	--	19	

Dynamic Characteristics

C_{iss}	Input Capacitance	$V_{DS} = 15\text{ V}, V_{GS} = 0\text{ V},$ $f = 1.0\text{ MHz}$	--	865	-	pF
C_{oss}	Output Capacitance		--	105	-	pF
C_{rss}	Reverse Transfer Capacitance		--	86	-	pF

Switching Characteristics

$t_{d(on)5}$	Turn-On Delay Time	$V_{GS} = 10\text{ V}, V_{DS} = 15\text{ V},$ $R_L = 3\Omega, I_D = 10\text{ A}, T_J = 25^\circ\text{C}$	--	7	--	ns
t_r	Turn-On Rise Time		--	5	--	ns
$t_{d(off)}$	Turn-Off Delay Time		--	26	--	ns
t_f	Turn-Off Fall Time		--	8	--	ns
Q_g	Total Gate Charge	$V_{DS} = 15\text{ V}, I_D = 10\text{ A},$ $V_{GS} = 10\text{ V}$	--	17.2	--	nC
Q_{gs}	Gate-Source Charge		--	2.7	--	nC
Q_{gd}	Gate-Drain Charge		--	4.0	--	nC

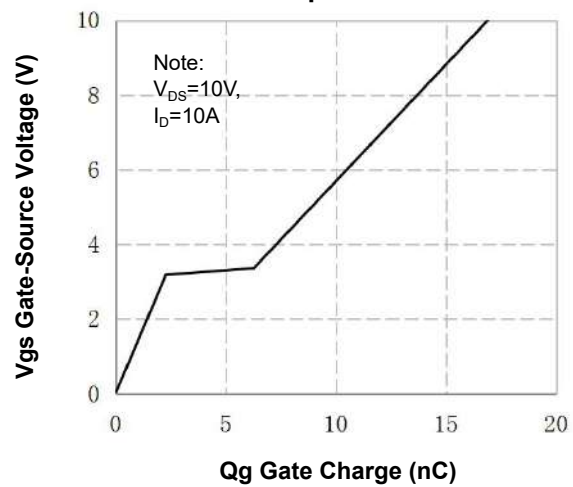
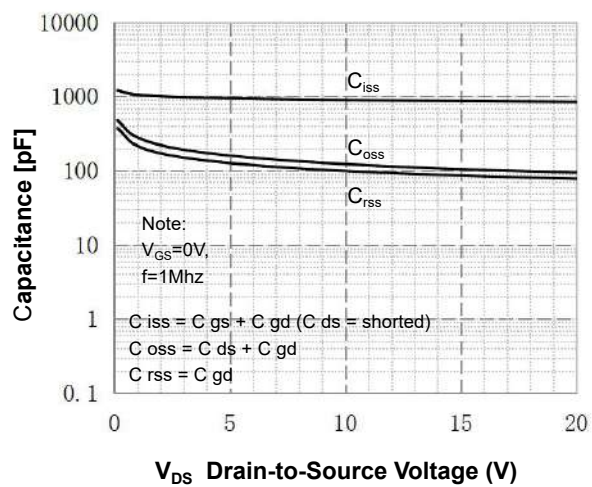
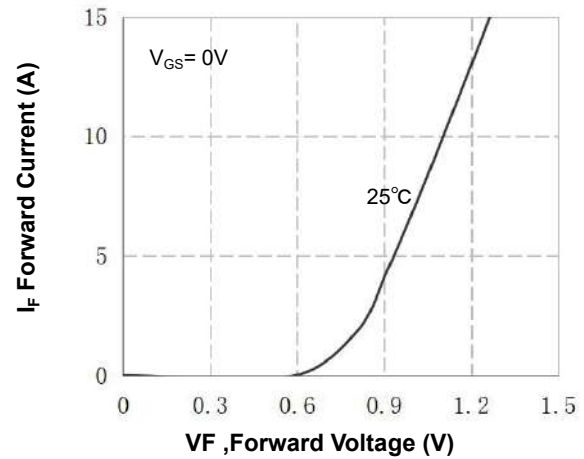
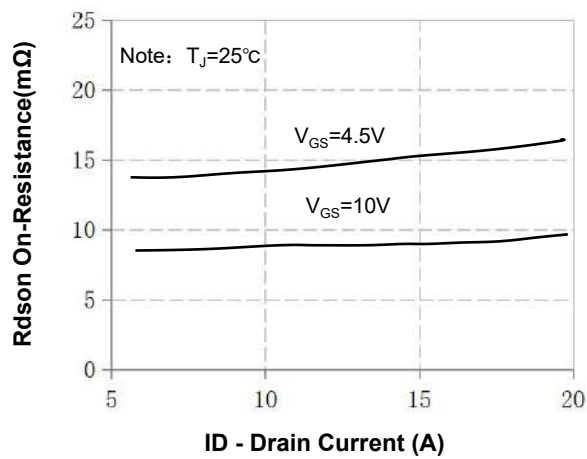
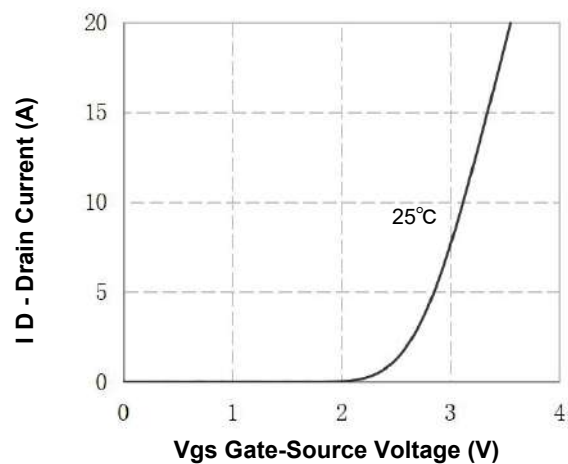
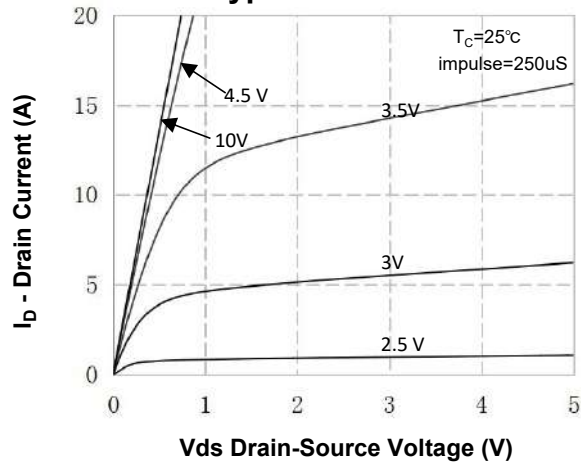
Drain-Source Diode Characteristics and Maximum Ratings

I_S	Maximum Continuous Drain-Source Diode Forward Current	--	--	35	A
I_{SM}	Maximum Pulsed Drain-Source Diode Forward Current	--	--	140	A
V_{SD}	Drain to Source Diode Forward Voltage, $V_{GS} = 0\text{ V}, I_{SD} = 10\text{ A}, T_J = 25^\circ\text{C}$	--	--	1.2	V

Notes:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
2. EAS condition: $T_J = 25^\circ\text{C}, V_{DD} = 15\text{ V}, V_G = 5\text{ V}, R_G = 25\Omega, L = 0.5\text{ mH}$
3. Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 0.5\%$

N-Channel Typical Characteristics



N- Channel Typical Characteristics (Continued)

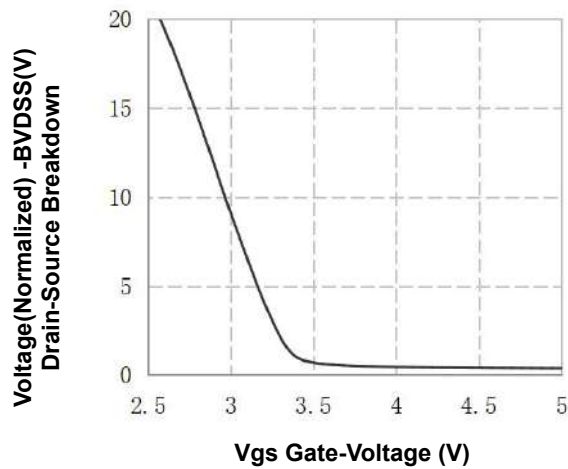


Figure 7. Breakdown Voltage Variation vs Gate-Voltage

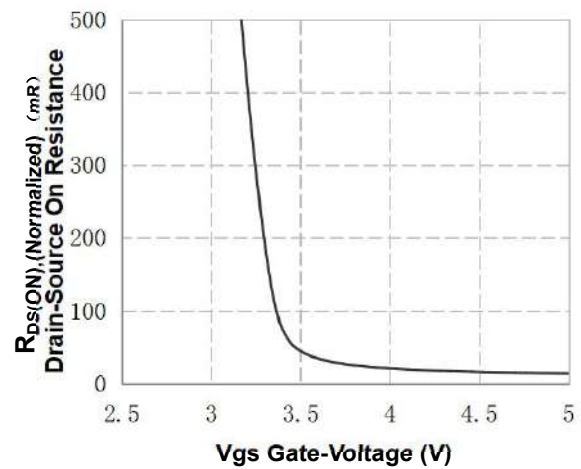


Figure 8. On-Resistance Variation vs Gate Voltage

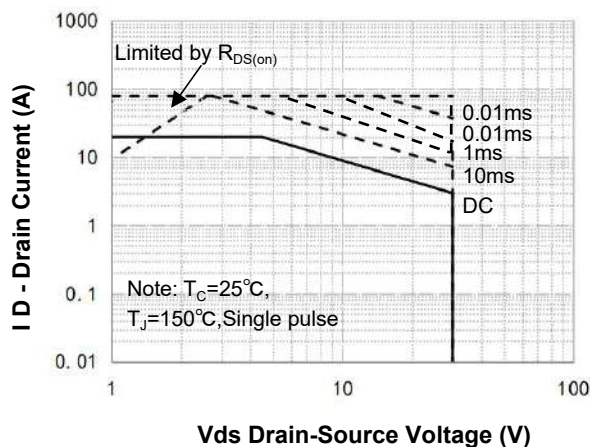


Figure 9. Maximum Safe Operating Area

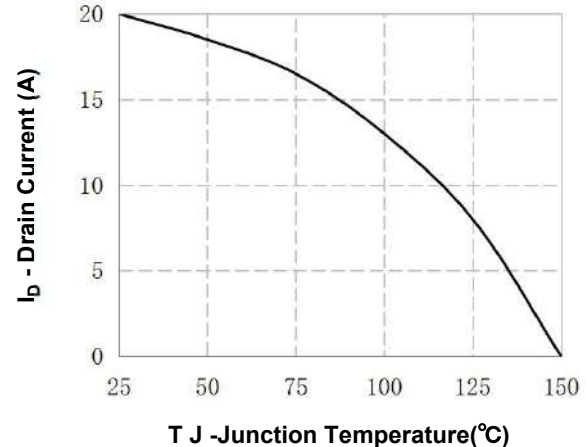


Figure 10. Maximum PContinuous Drain Current vs Case Temperature

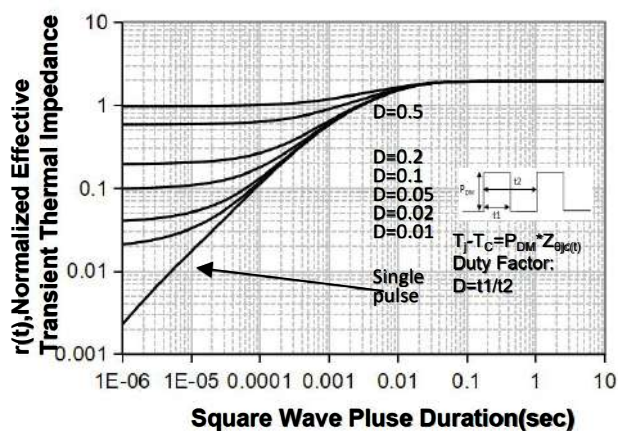
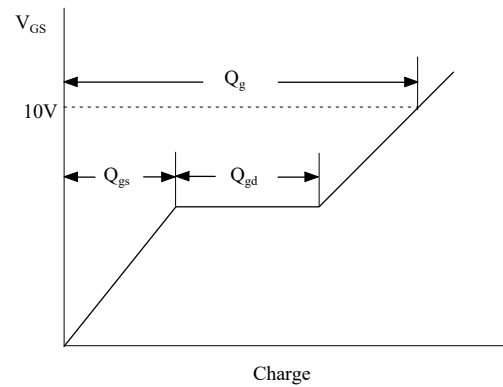
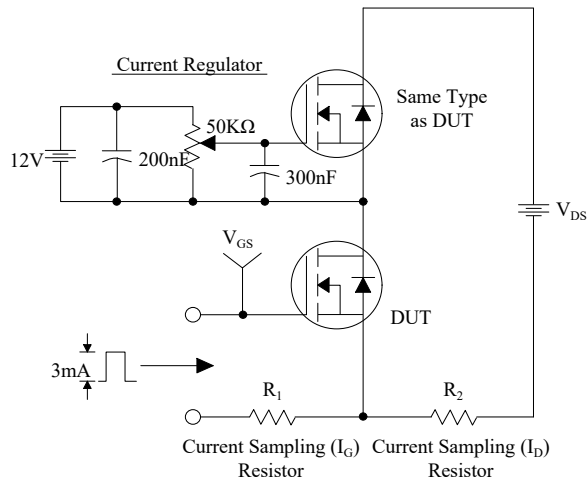
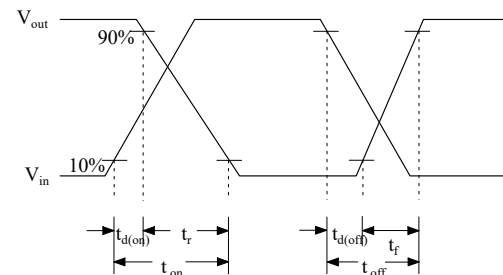
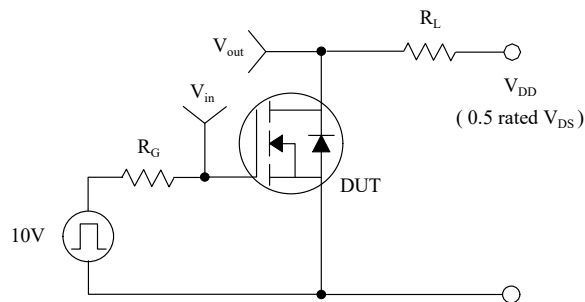


Figure 11. Transient Thermal Response Curve

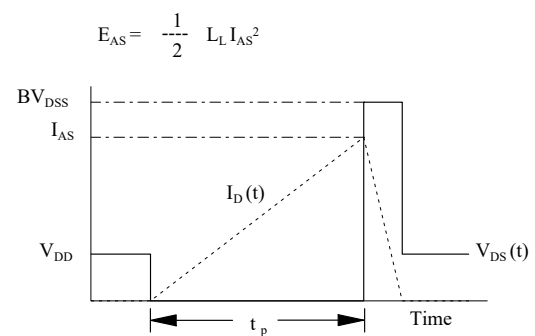
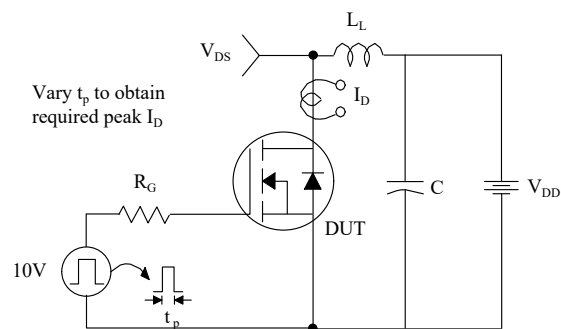
Gate Charge Test Circuit & Waveform



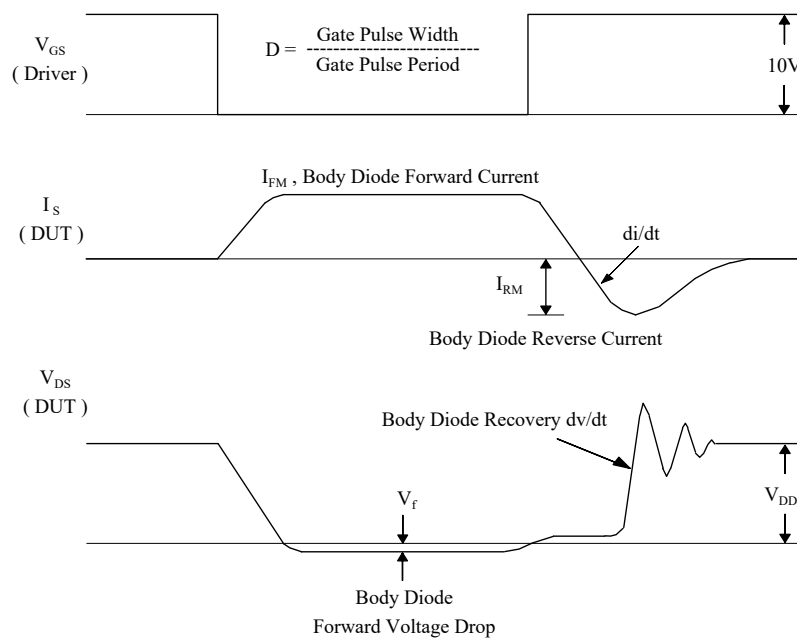
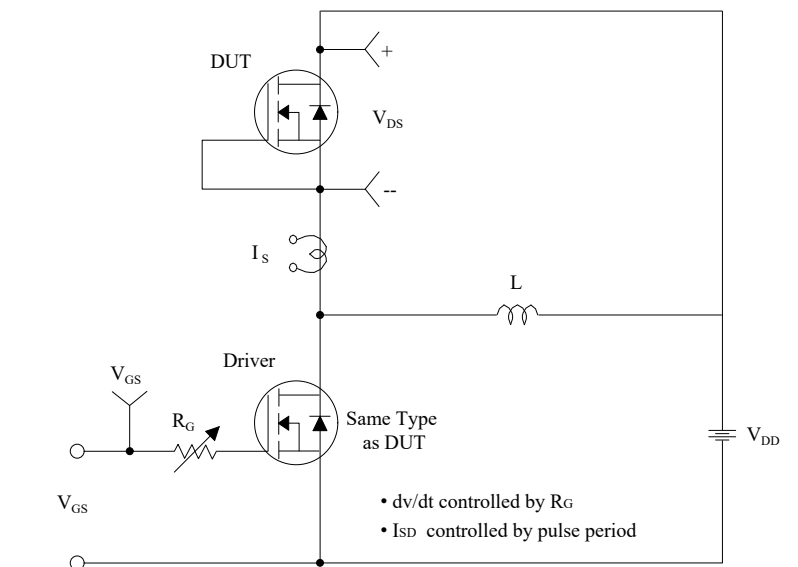
Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching Test Circuit & Waveforms

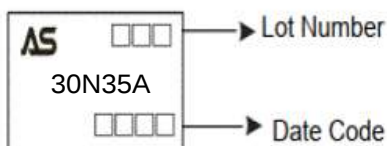


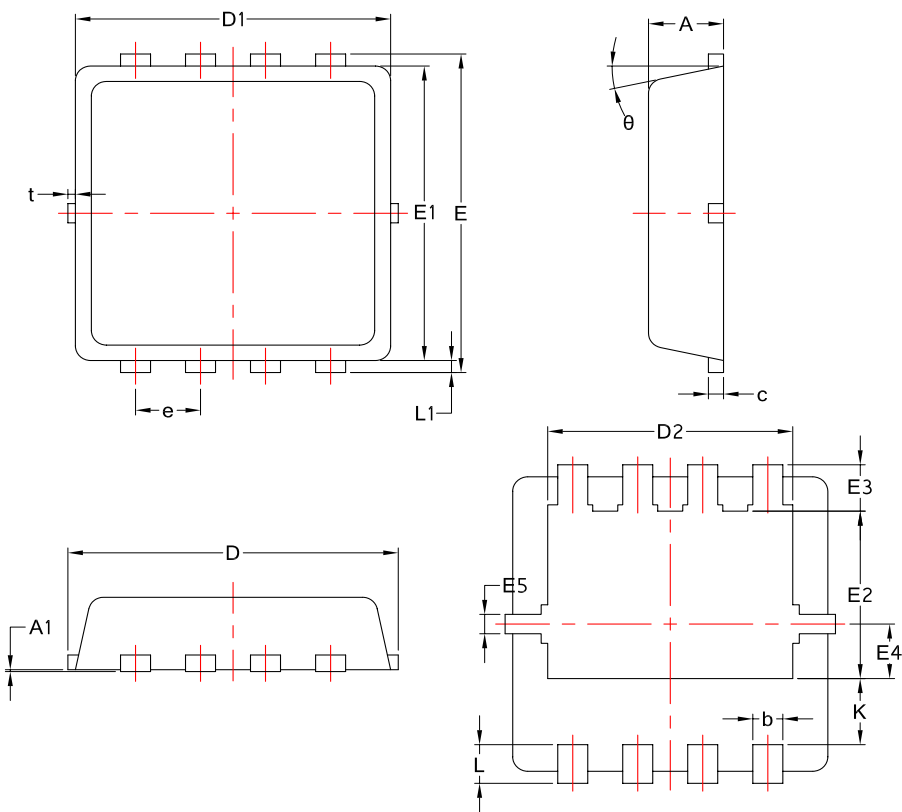
Peak Diode Recovery dv/dt Test Circuit & Waveforms



Ordering and Marking Information

Ordering Device No.	Marking	Package	Packing	Quantity
ASDM30N35AE-R	30N35A	PDFN3.3x3.3-8	Tape&Reel	5000/Reel

PACKAGE	MARKING
PDFN3.3x3.3-8	 The marking diagram shows a rectangular package with the following markings: 'AS' logo, '30N35A', a 4-digit Lot Number, and a 4-digit Date Code.



SYMBOL	COMMON		
	MM		
	MIN	NOM	MAX
A	0.70	0.75	0.85
A1	/	/	0.05
b	0.20	0.30	0.40
c	0.10	0.152	0.25
D	3.15	3.30	3.45
△ ₂ △ ₂ D1	3.00	3.15	3.25
△ ₂ △ ₂ D2	2.29	2.45	2.65
E	3.15	3.30	3.45
E1	2.90	3.05	3.20
E2	1.54	1.74	1.94
△ ₃ △ ₃ E3	0.28	0.48	0.65
E4	0.37	0.57	0.77
E5	0.10	0.20	0.30
e	0.60	0.65	0.70
△ ₂ △ ₂ K	0.59	0.69	0.89
L	0.30	0.40	0.50
L1	0.06	0.125	0.20
△ ₂ △ ₂ t	0	0.075	0.13
△ ₂ △ ₂ θ	10°	12°	14°

► Package body dimension not include mold flash.

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