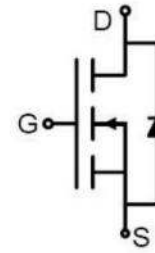


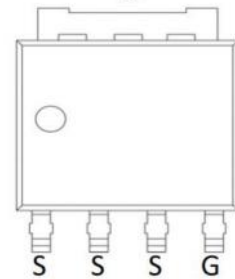
N-Channel Enhancement Mosfet

Features

- 40V,340A
 $R_{DS(ON)} < 0.8m\Omega @ V_{GS}=10V$ TYP: $0.66m\Omega$
 $R_{DS(ON)} < 1.2m\Omega @ V_{GS}=4.5V$ TYP: $0.93m\Omega$
- Split Gate Trench Technology
- Lead free product is acquired
- Excellent $R_{DS(ON)}$ and Low Gate Charge
- $T_{jmax}=175^{\circ}C$
- P/N suffix V means AEC-Q101 qualified, e.g: RM340N40LF56V



Schematic Diagram
D



Applications

- Power management
- DC/DC converters
- Motor driver
- Halogen-free

Package Marking and Ordering Information

Device Marking	Device	Device Package	Packaging Code	Reel Size	Quantity(PCS)
340N40	RM340N40LF56V	LFPAK5X6	-W	13inch	5000

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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	40	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ($T_c=25^{\circ}C$) ⁽¹⁾	I_D	340	A
Continuous Drain Current ($T_c=100^{\circ}C$)	I_D	240	A
Pulsed Drain Current ⁽¹⁾	I_{DM}	1360	A
Drain Power Dissipation	P_D	158	W
Single Pulsed Avalanche Energy ⁽²⁾	E_{AS}	1000	mJ
Thermal Resistance from Junction to Ambient ⁽³⁾	$R_{\theta JA}$	40	$^{\circ}C/W$
Thermal Resistance from Junction to Case	$R_{\theta JC}$	0.95	$^{\circ}C/W$
Junction Temperature	T_J	-55~ +175	$^{\circ}C$
Storage Temperature	T_{STG}	-55~ +175	$^{\circ}C$

Notes:

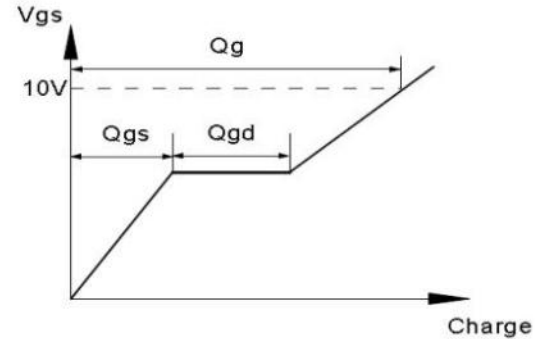
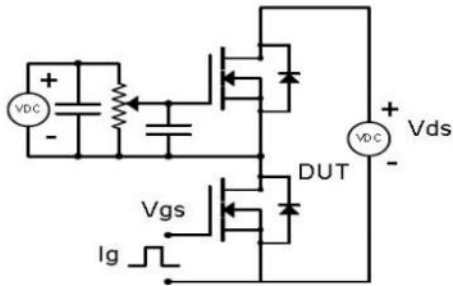
- 1) Repetitive Rating: pulse width limited by maximum junction temperature
- 2) EAS condition : $T_J=25^{\circ}C$, $V_{DD}=50V$, $V_{GS}=10V$, $L=0.5mH$, $R_g=25\Omega$, $I_{AS}=63.4A$

MOSFET ELECTRICAL CHARACTERISTICS($T_J=25^{\circ}\text{C}$ unless otherwise noted)

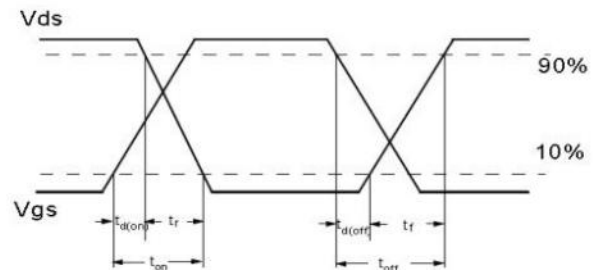
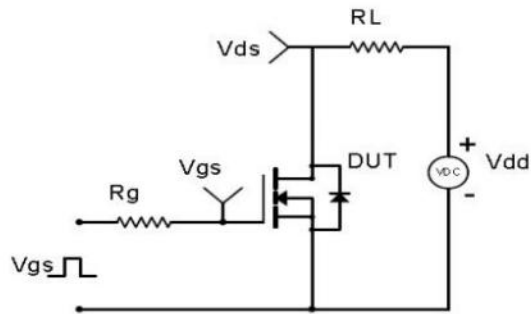
Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain-source breakdown voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D =250μA	40	-	-	V
Zero gate voltage drain current	I _{DSS}	V _{DS} =40V, V _{GS} = 0V	-	-	1	μA
Gate-body leakage current	I _{GSS}	V _{GS} =±20V, V _{DS} = 0V	-	-	±100	nA
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1.2	1.7	2.5	V
Drain-source on-resistance	R _{DS(on)}	V _{GS} =10V, I _D =20A	-	0.66	0.8	mΩ
		V _{GS} =4.5V, I _D =15A	-	0.93	1.2	
Forward Transconductance	g _{fs}	V _{DS} = 5V, I _D =20A	-	87	-	S
Gate Resistance	R _g	V _{GS} = 0V, V _{DS} = 0V, f=1.0MHz	-	2.2	-	Ω
Dynamic characteristics						
Input Capacitance	C _{iss}	V _{DS} =20V, V _{GS} =0V, f=1MHz	-	5625	-	pF
Output Capacitance	C _{oss}		-	3333	-	
Reverse Transfer Capacitance	C _{rss}		-	114	-	
Switching characteristics						
Turn-on delay time	t _{d(on)}	V _{DD} =20V, I _D =20A, R _G =3Ω, V _{GS} =10V	-	4.6	-	ns
Turn-on rise time	t _r		-	10	-	
Turn-off delay time	t _{d(off)}		-	75	-	
Turn-off fall time	t _f		-	35	-	
Total Gate Charge	Q _g	V _{DS} =20V, I _D =20A, V _{GS} =10V	-	81	-	nC
Gate-Source Charge	Q _{gs}		-	15	-	
Gate-Drain Charge	Q _{gd}		-	13	-	
Source-Drain Diode characteristics						
Diode Forward voltage	V _{SD}	T _J =25℃, V _{GS} =0V, I _S =20A	-	0.8	1.2	V
Diode Forward current	I _S	T _C =25℃	-	-	340	A
Body Diode Reverse Recovery Time	T _{rr}	T _J =25℃, di/dt=100A/us,IF=20A	-	67	-	ns
Body Diode Reverse Recovery Charge	Q _{rr}		-	111	-	nC

Test Circuit & Waveform

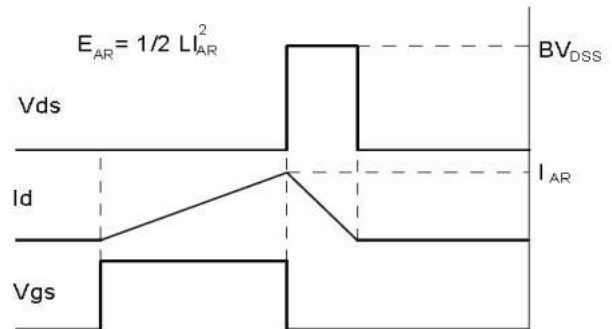
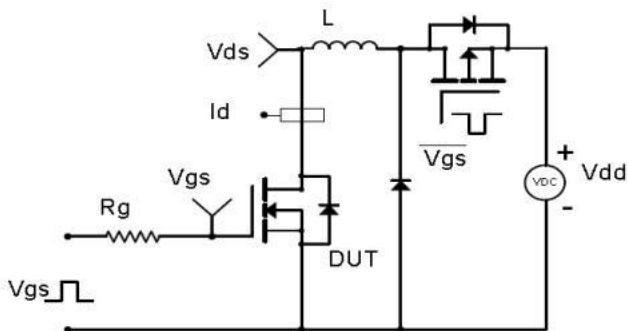
Gate Charge Test Circuit & Waveform



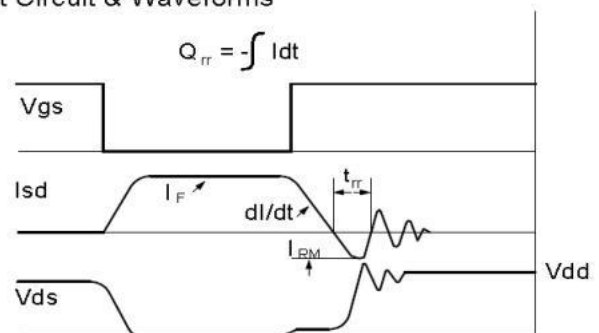
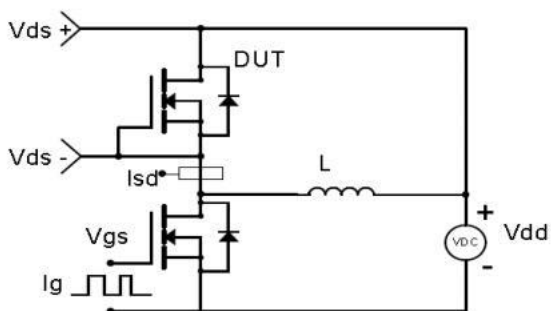
Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



RATING AND CHARACTERISTICS CURVES (RM340N40LF56V)

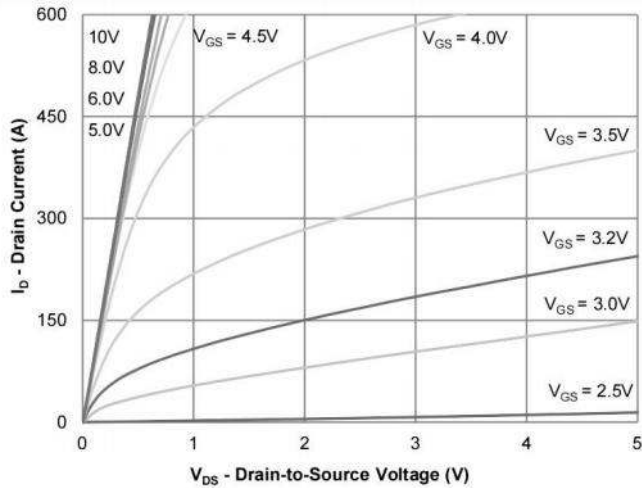


Figure 1: Output Characteristics

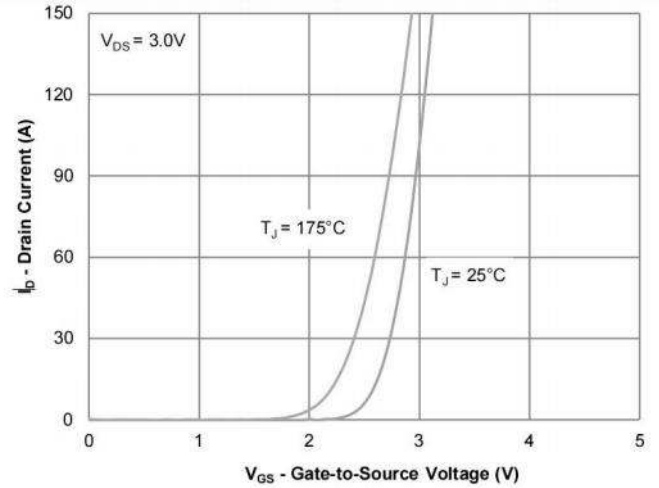


Figure 2: Transfer Characteristics

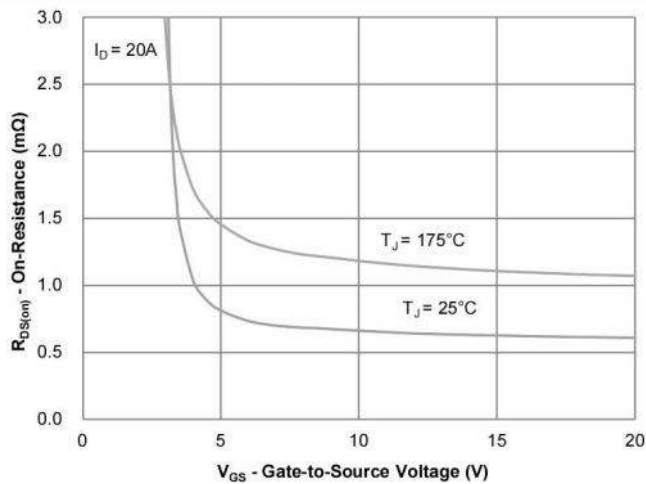


Figure 3: On-Resistance vs. Gate-Source Voltage

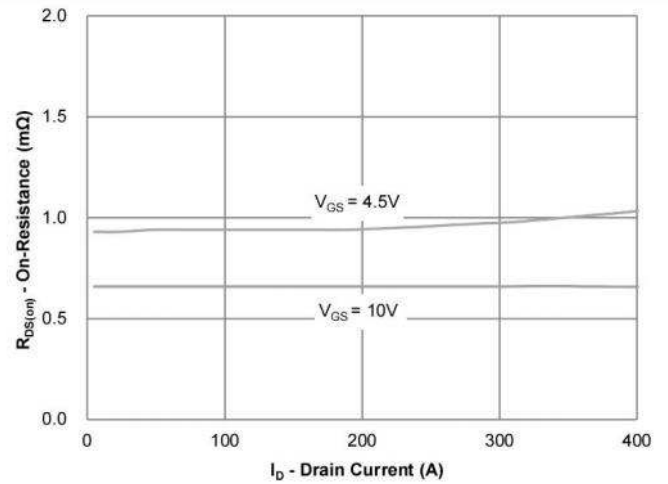


Figure 4: On-Resistance vs. Gate-Source Voltage

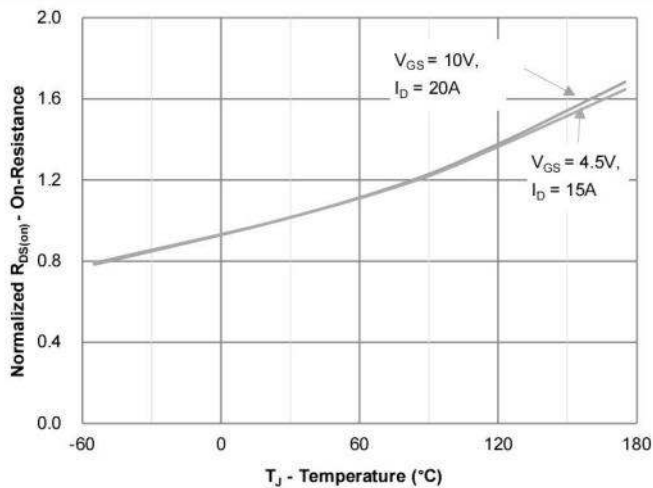


Figure 5: On-Resistance vs. Junction Temperature

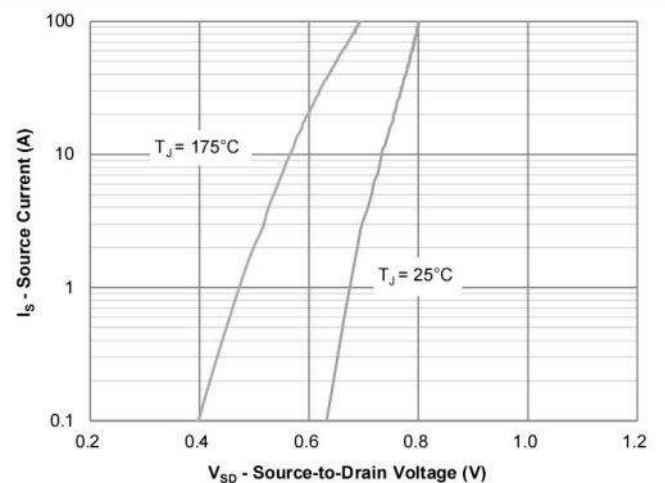


Figure 6: Source-Drain Diode Forward Voltage

RATING AND CHARACTERISTICS CURVES (RM340N40LF56V)

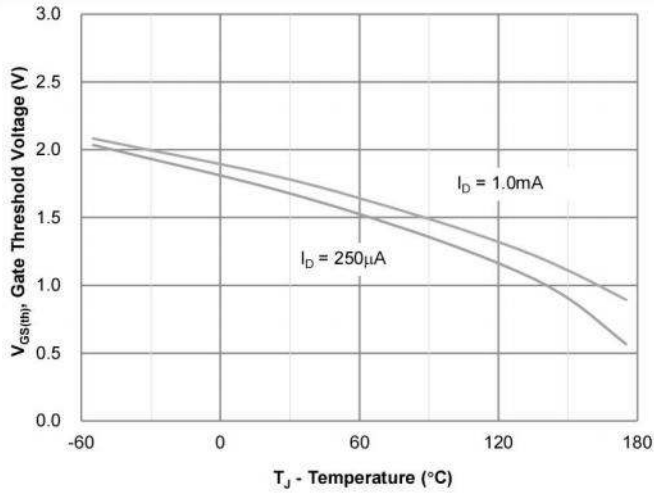


Figure 7: Gate Threshold Variation vs. Junction Temperature

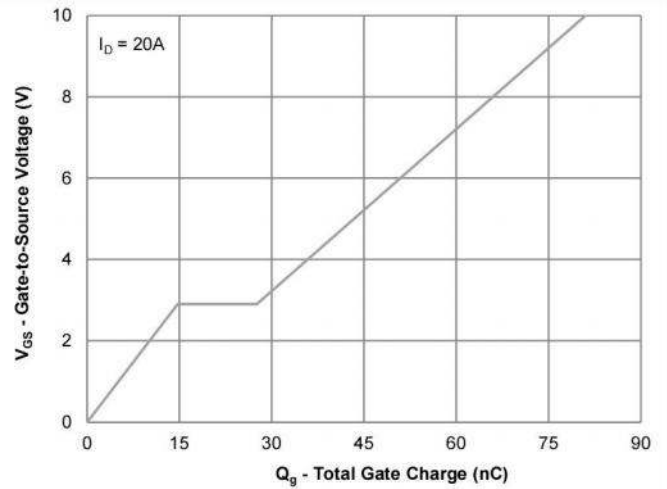


Figure 8: Gate Charge Characteristics

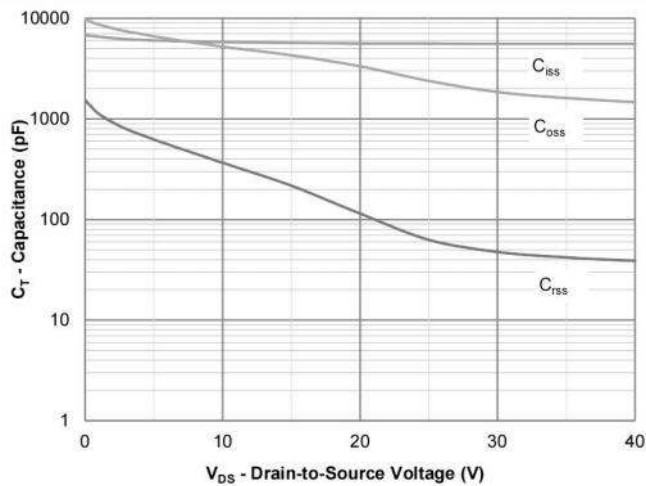


Figure 9: Capacitance Characteristics

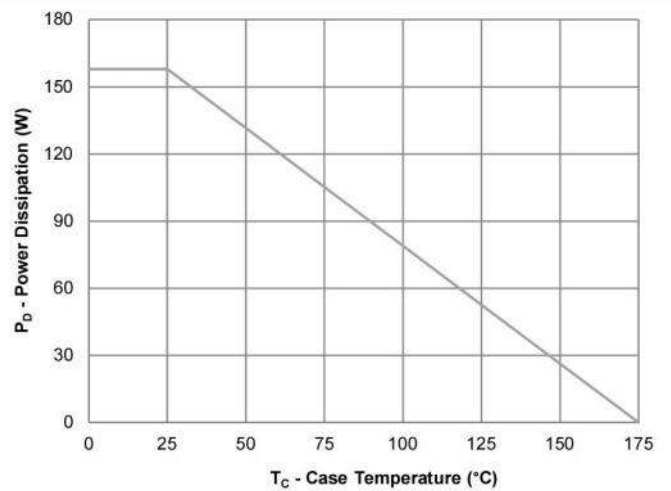


Figure 10: Power Derating

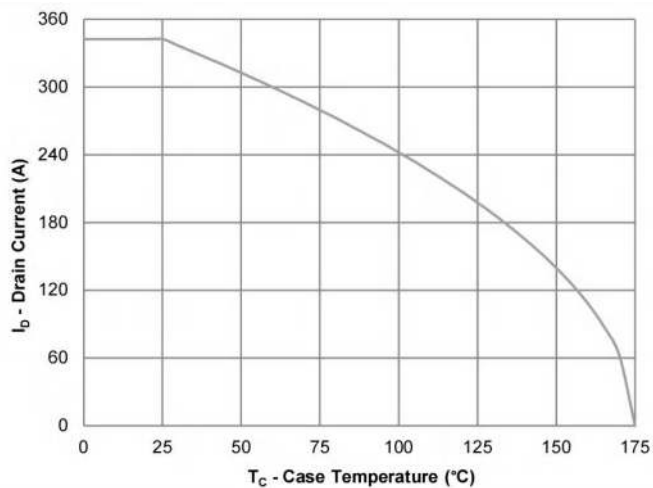


Figure 11: Current Derating

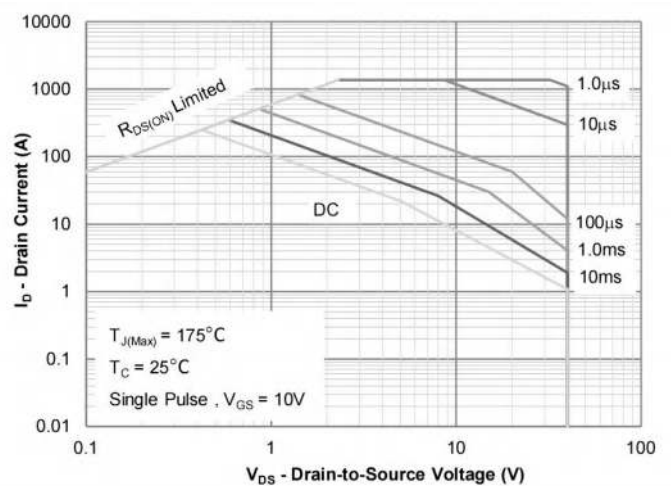


Figure 12: Safe Operating Area

RATING AND CHARACTERISTICS CURVES (RM340N40LF56V)

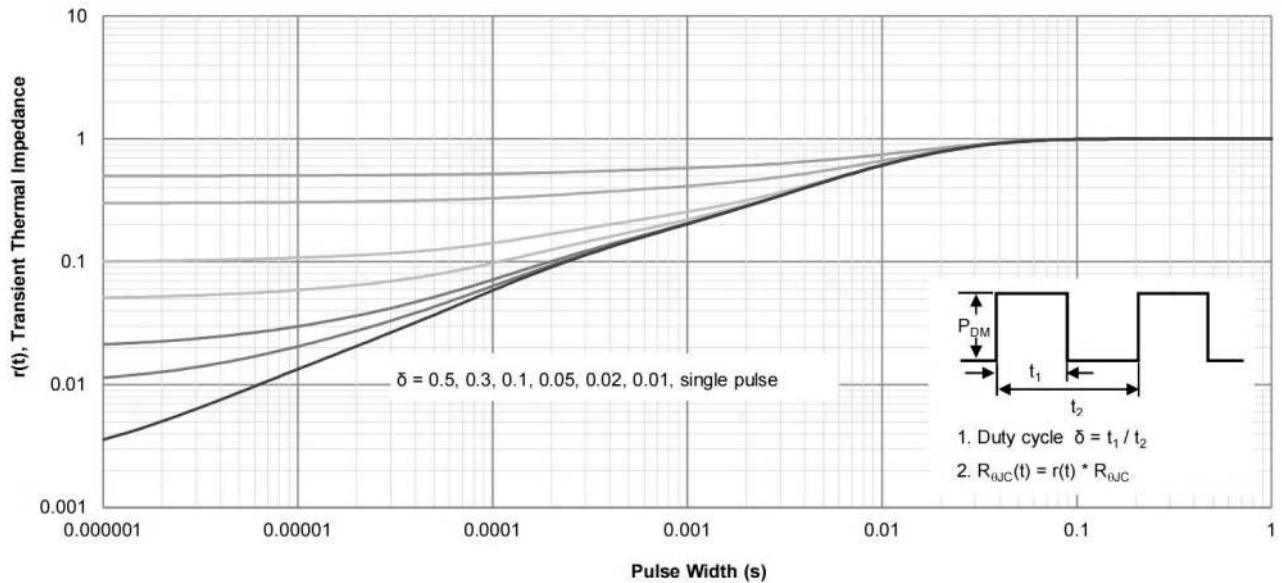
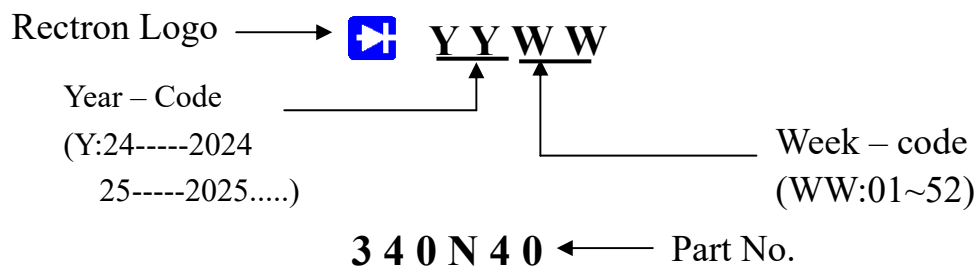


Figure 13: Normalized Maximum Transient Thermal Impedance



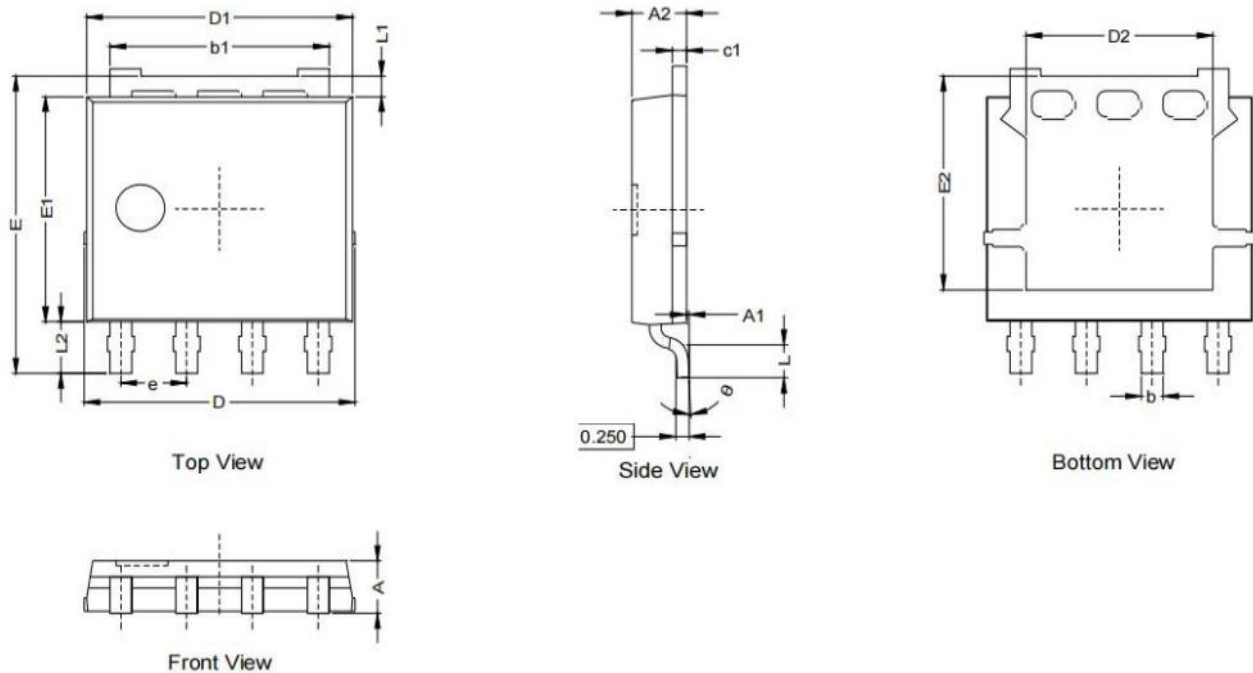
RECTRON

Marking on the body



LFPAK5X6 Package Information

Package Outline



NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M,1994.
2. ALL DIMNESIONS IN MILLIMETER (ANNGLE IN DEGREE).
3. DIMENSIONS "D1" AND "E1" DO NOT INCLUDE MOLD FLASH PROTRUSIONS OR GATE BURRS.

DIM.	MILLIMETER		
	MIN.	NOM.	MAX.
A	1.00	--	1.30
A1	0.00	--	0.15
A2	0.98	1.03	1.10
b	0.35	0.42	0.50
b1	4.02	4.23	4.41
c	0.19	0.22	0.25
c1	0.24	0.27	0.30
D	5.10	--	5.30
D1	4.95	5.13	5.30
D2	3.50	--	3.70
E	5.95	--	6.20
E1	4.45	4.58	4.70
E2	4.10	--	4.45
e	1.27 BSC.		
L	0.40	0.65	0.85
L1	0.27	--	0.57
L2	0.80	--	1.30
theta	0°	--	8°

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