

N-Ch and P-Ch Fast Switching MOSFET

● DESCRIPTION

The VIC1641DQ is the highest performance trench N-Ch and P-Ch MOSFETs With extreme high cell density, which provide excellent R_{DS(on)} and gate charge for most of the synchronous buck converter applications.

The VIC1641DQ meet the Rohs and Green Product requirement 100% EAS guaranteed with full function reliability approved.

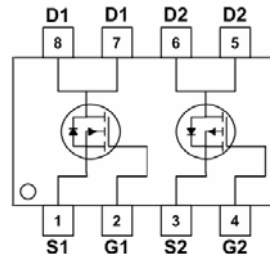
● FEATURE

Channel	BVDSS	R _{DS(on)}	I _D
N-Ch	40V	18mΩ	10A
p-Ch	-40V	32 mΩ	-10A

● APPLICATIONS

- ◆ Drivers: Relays, lamps, Memories.
- ◆ Battery operated systems.
- ◆ CCFL Back-light Inverter

● PIN CONFIGURATION



● ABSOLUTE MAXIMUM RATINGS(T_A=25°C Unless otherwise noted)

Symbol	Parameter	Rating		Unit
		N-Ch	P-Ch	
V _{DSS}	Drain-Source Voltage	40	-40	V
V _{GSS}	Gate-Source Voltage	±20	±20	
I _D	Continuous Drain Current ,(V _{GS} =10V)	10	-10	A
I _{DP}	Drain Current (Pulse)	25	-25	A
T _J	Maximum Junction Temperature	-55 to 150		°C
T _{STG}	Storage Temperature Range	-55 to 150		
P _D	Maximum Power Dissipation (T _a =25°C)	2.5	2.8	W



VIC1641DQ

● N-Channel Electrical Characteristics (TA=25°C Unless otherwise noted)

Symbol	Parameter	Test Conditions	N-Ch			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250μA	40	--	--	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =32V, V _{GS} =0V	--	--	1	μA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	1	1.5	2.5	V
I _{GSS}	Gate-Body Leakage Current	V _{GS} =±20V, V _{DS} =0V	--	--	±100	nA
R _{DS(ON)} a	Drain-Source On-state Resistance	V _{GS} =10V, I _D =10A	--	18	20	mΩ
		V _{GS} =4.5V, I _D =8A	--	22	25	
g _{fs}	Forward Transconductance a	V _{ds} =5V, I _d =10A	--	35	--	S
Dynamic b						
Q _g	Total Gate Charge	V _{GS} =4.5V, V _{DS} =32V, I _D =10A	--	11	15	nC
Q _{gs}	Gate-Source Charge		--	2.8	3.9	
Q _{gd}	Gate-Drain Charge		--	4.7	6.6	
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =15V, f=1MHz	--	1012	1417	pF
C _{oss}	Output Capacitance		--	106	153	pF
C _{rss}	Reverse Transfer Capacitance		--	77	109	pF
SWITCHING CHARACTERISTICS						
t _{d(ON)}	Turn-on Delay Time	V _{DD} =20V, I _{DS} =15A, V _{GEN} =4.5V, R _G =3.3Ω	--	3	5.6	ns
t _{d(OFF)}	Turn-off Delay Time		--	21	41	
DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS						
I _s	Drain-Source Diode Forward Current	--	--	--	10	A
V _{sd} a	Diode Forward Voltage	I _s = 1A, V _{GS} = 0V	--	--	1.2	V

Notes:

- a. Pulse test; pulse width ≤ 300μs, duty cycle ≤ 2%.
b. Guaranteed by design, not subject to production testing.

The products and product specifications contained herein are subject to change without notice to improve performance characteristics. consult us, or our representatives before use, to confirm that the information in this datasheet is up to date.

we assume no responsibility for any infringement of patents, patent rights, or other rights arising from the use of any information and circuitry in this datasheet.



VIC1641DQ

● P -Channel Electrical Characteristics (TA=25°C Unless otherwise noted)

Symbol	Parameter	Test Conditions	P-Ch			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =-250μA	-40	--	--	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-32V, V _{GS} =0V	--	--	-1	μA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =-250μA	-1.2	-1.5	-2.5	V
I _{GSS}	Gate-Source Leakage Current	V _{GS} =±20V, V _{DS} =0V	--	--	±100	nA
R _{DS(ON) a}	Drain-Source On-state Resistance	V _{GS} =-10V, I _D =-8A	--	25	32	mΩ
		V _{GS} =-4.5V, I _D =-6A	--	38	46	
g _{fs}	Forward Transconductance a	V _{DS} =5V, I _D =-8A	--	11	--	S
Dynamic b						
Q _g	Total Gate Charge(-4.5V)	V _{GS} =-4.5V, V _{DS} =-15V, I _D =-1A	--	12	--	nC
Q _{gs}	Gate-Source Charge		--	3.5	--	
Q _{gd}	Gate-Drain Charge		--	3.3	--	
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =-15V, f=1MHz	--	1415	--	pF
C _{oss}	Output Capacitance		--	134	--	
C _{rss}	Reverse Transfer Capacitance		--	102	--	
SWITCHING CHARACTERISTICS						
t _{d(ON)}	Turn-on Delay Time	V _{DD} =-15V, V _{GS} =-10V, I _{DS} =-1A, R _G =3.3Ω	--	22	--	ns
t _{d(OFF)}	Turn-off Delay Time		--	59	--	
DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS						
I _s	Continuous Source Current	V _g =V _d =0V, Force Current	--	--	-27	A
V _{sd a}	Diode Forward Voltage	I _s = -1A, V _{GS} = 0V	--	--	-1.2	V

Notes:

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● **N-Channel Typical Characteristics**($T_A=25^{\circ}\text{C}$ Unless otherwise noted)

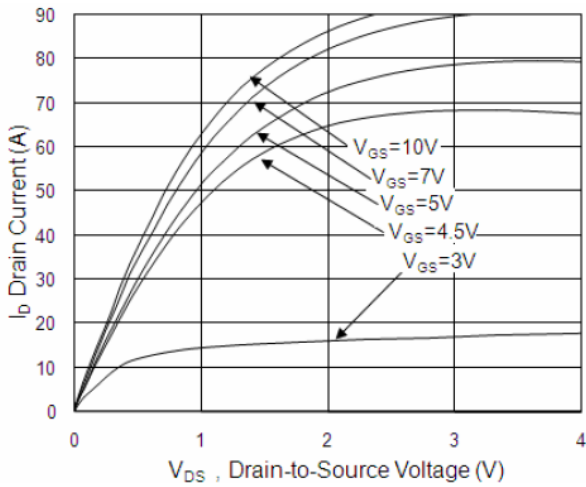


Fig.1 Typical Output Characteristics

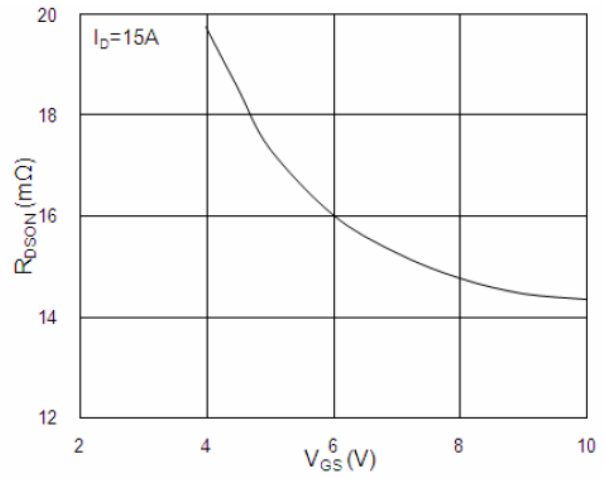


Fig.2 On-Resistance v.s Gate-Source

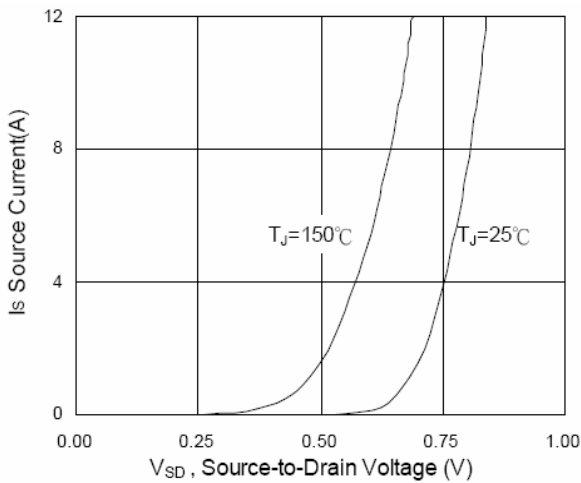


Fig.3 Forward Characteristics of Reverse

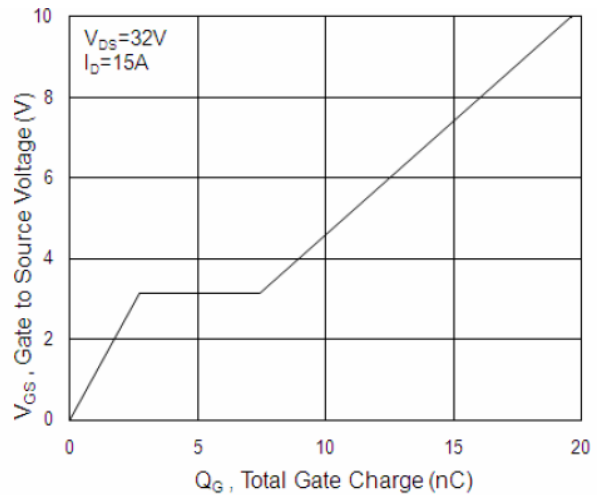


Fig.4 Gate-Charge Characteristics

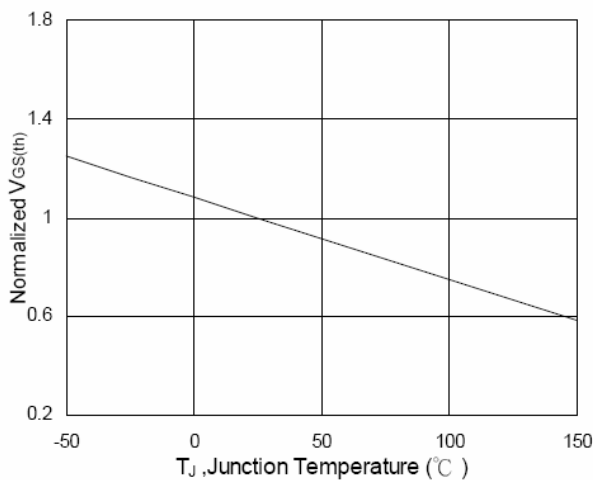


Fig.5 Normalized $V_{GS(th)}$ v.s T_J

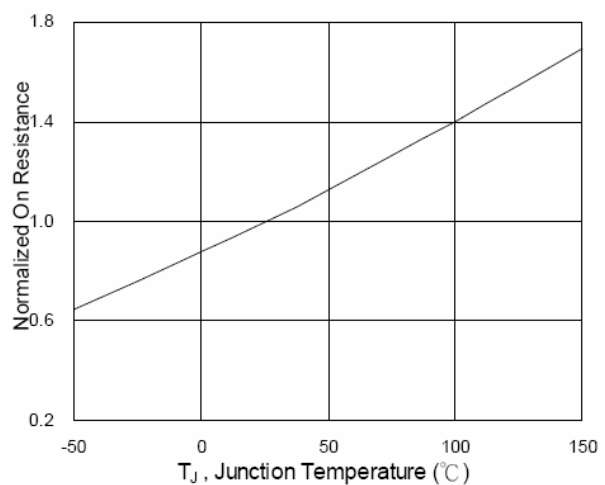


Fig.6 Normalized $R_{ds(on)}$ v.s T_J

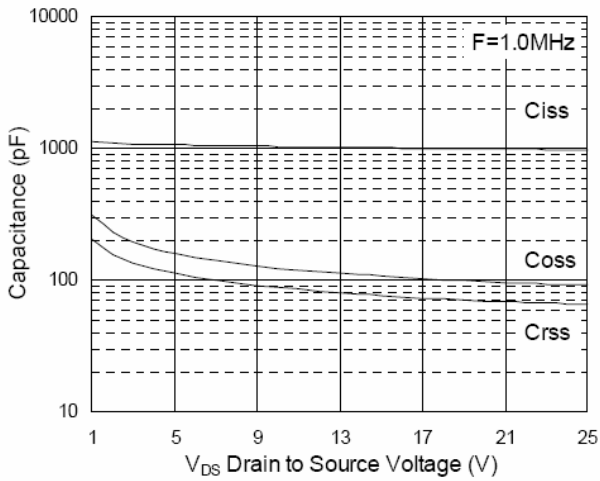


Fig.7 Capacitance

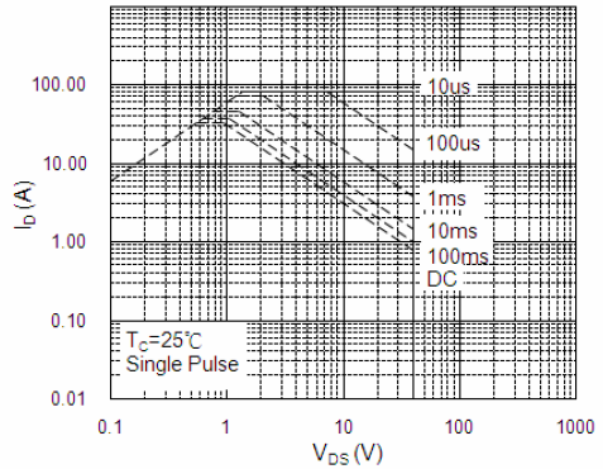


Fig.8 Safe Operating Area

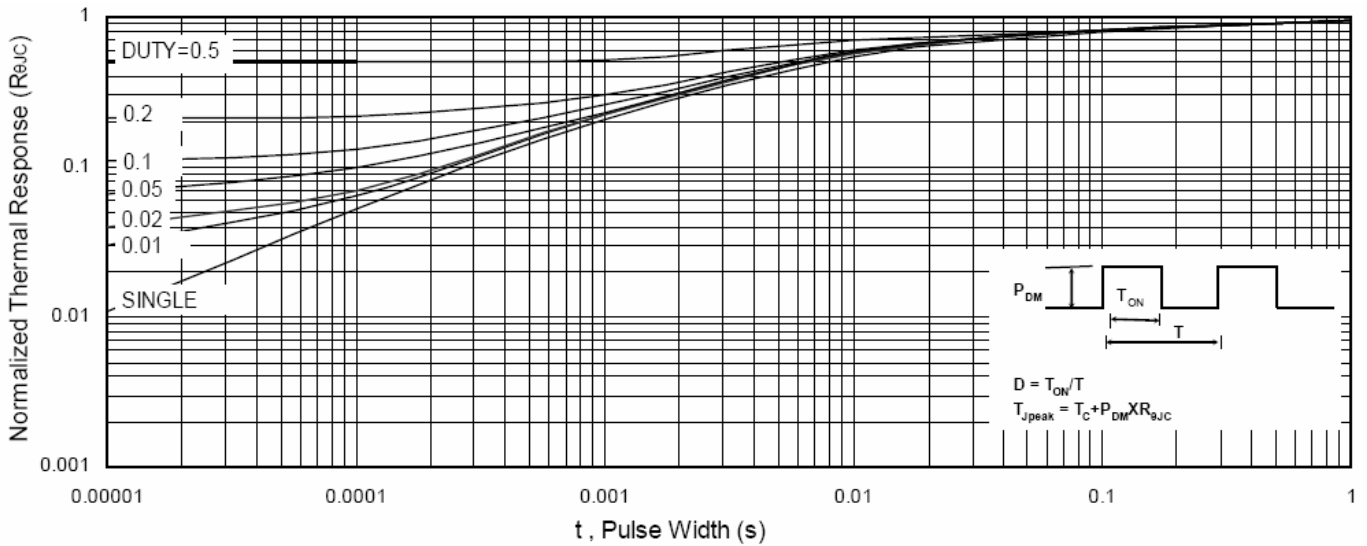


Fig.9 Normalized Maximum Transient Thermal Impedance

● **P-Channel Typical Characteristics**(TA=25°C Unless otherwise noted)

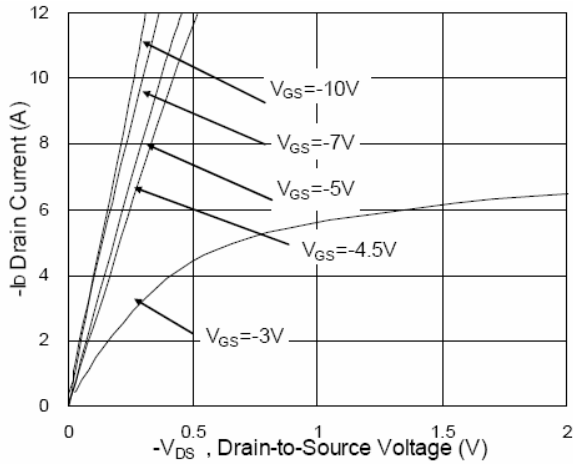


Fig.1 Typical Output Characteristics

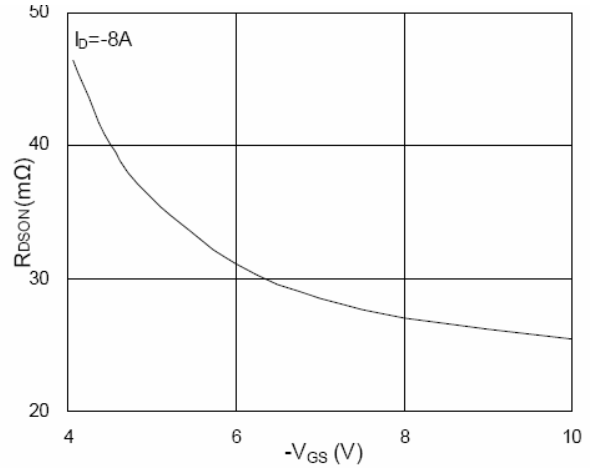


Fig.2 On-Resistance v.s Gate-Source

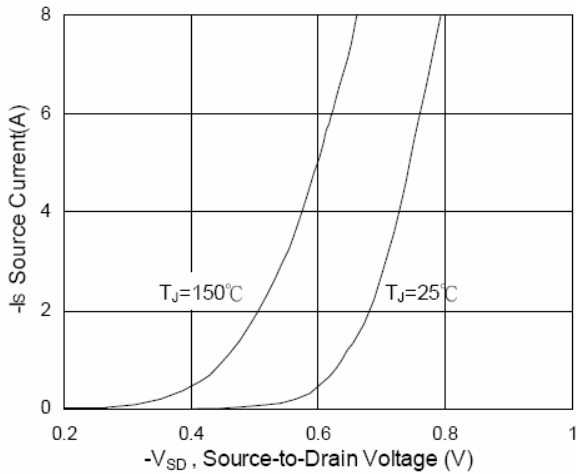


Fig.3 Forward Characteristics of Reverse

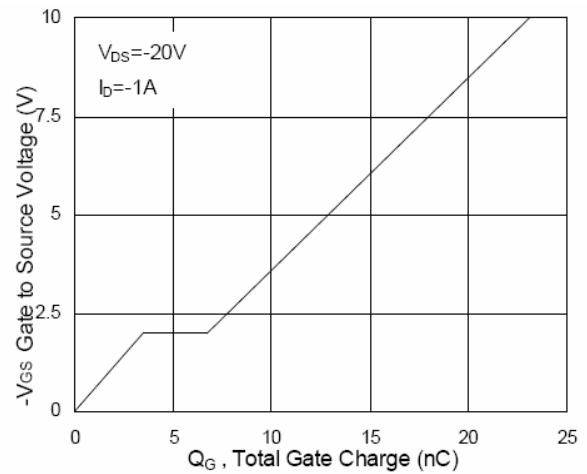


Fig.4 Gate Charge Characteristics

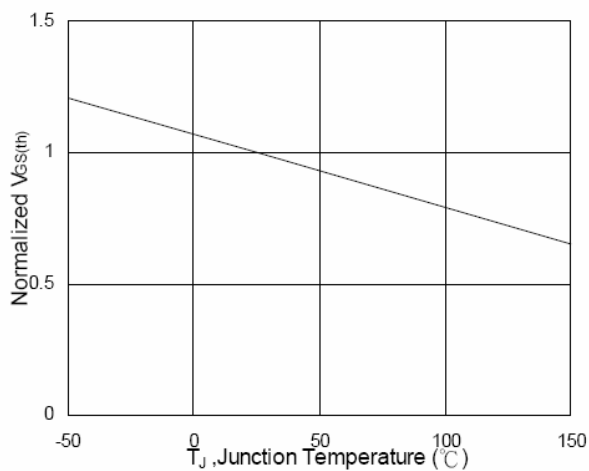


Fig.5 Normalized Vgs(th) v.s Tj

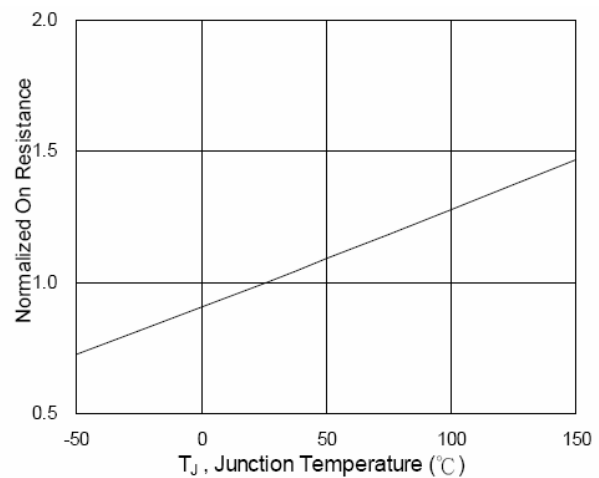


Fig.6 Normalized Rds(on) v.s Tj

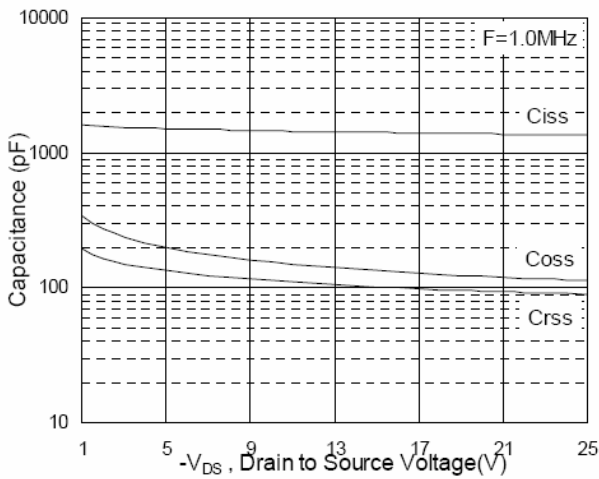


Fig.7 Capacitance

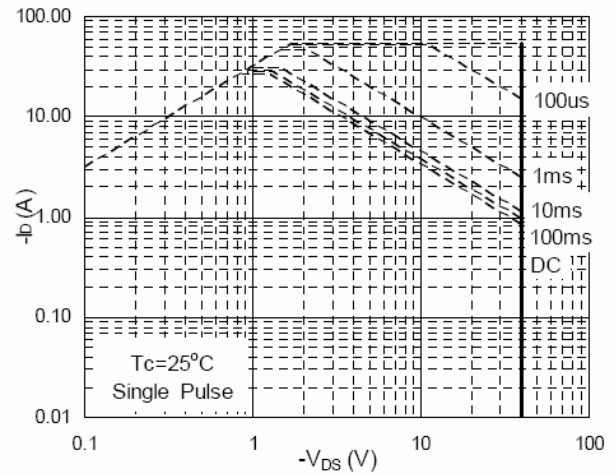


Fig.8 Safe Operating Area

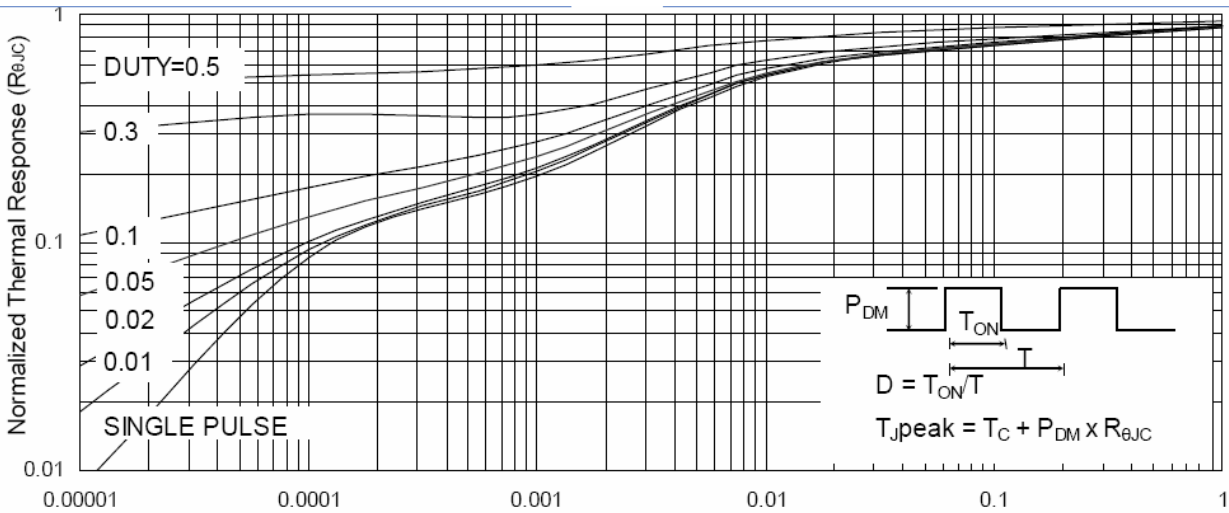
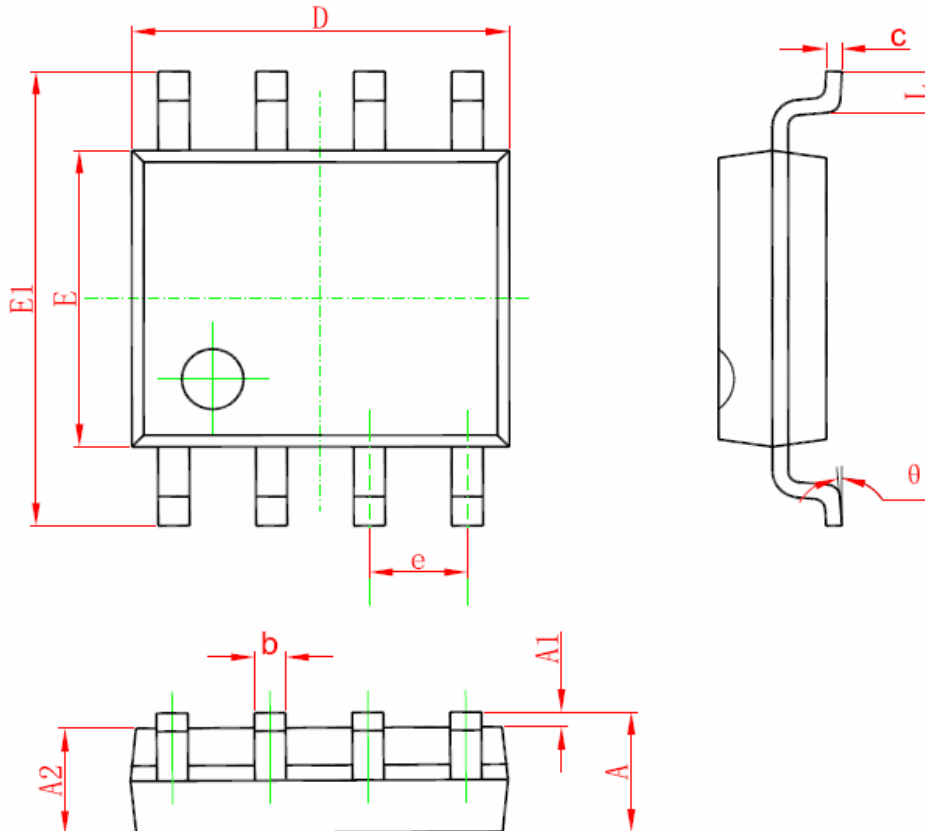


Fig.9 Normalized Maximum Transient Thermal Impedance

● ORDERING INFORMATION

Part Number	Package code	Shipping
VIC1641DQ	DQ: SOP8	2500/Tape & Reel

● PACKAGE DIMENSIONS



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270 (BSC)		0.050 (BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

单击下面可查看定价，库存，交付和生命周期等信息

[>>VIC\(微科\)](#)