

Enhancement Mode N-Channel Power MOSFET

PRIMARY CHARACTERISTICS

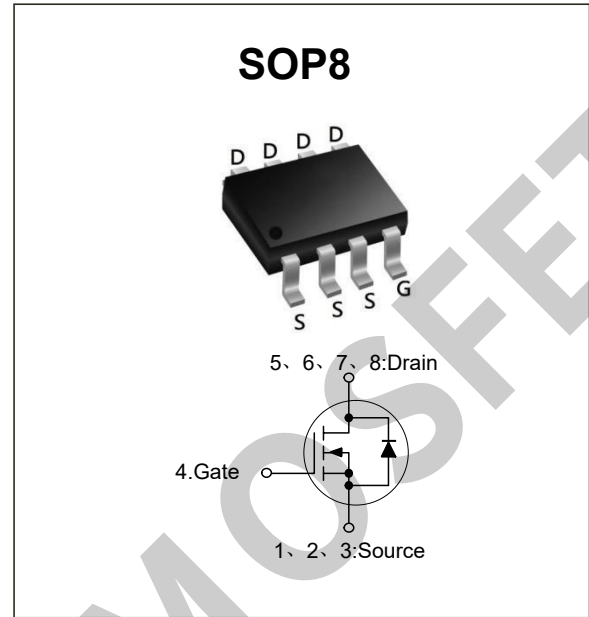
BV _{DSS}	R _{DS(ON)} MAX	I _D
100V	120mΩ@V _{GS} =10V	5
	140mΩ@V _{GS} =4.5V	

Features

- N-Channel Enhancement Mode MOSFET
- 100V / 5A, R_{DS(on)} < 120mΩ @ V_{GS}=10V
- R_{DS(on)} < 140mΩ @ V_{GS}=4.5V
- High density cell design for ultra low R_{DS(on)}
- Advanced trench technology
- RoHS compliant

Mechanical Data

- Package: SOP-8
- Surface mount package
- Pin: 5-8 Drain, 1-3 Source, 4 Gate
- Green device



Applications

- PWM applications
- Load switch
- Power management
- DC-DC converter

Ordering Information

Orderable Part Number	Package Type	Device Marking	Form	Quantity (pcs)
DC10N10C	SOT-23	-	7" Tape&Reel	3,000

Maximum Ratings (@ T_A = 25°C, unless otherwise specified.)

Parameter	Symbol	Value	Unit
Drain - Source Voltage	V _{DS}	100	V
Gate - Source Voltage	V _{GS}	±20	V
Continuous Drain Current (V _{GS} = 4.5V) ⁽¹⁾	I _D	5	A
Pulsed Drain Current ⁽²⁾	I _{DM}	12	A
Power Dissipation	P _D	1.9	W
Junction & Storage Temperature Range	T _J , T _{STG}	-55 ~ +150	°C

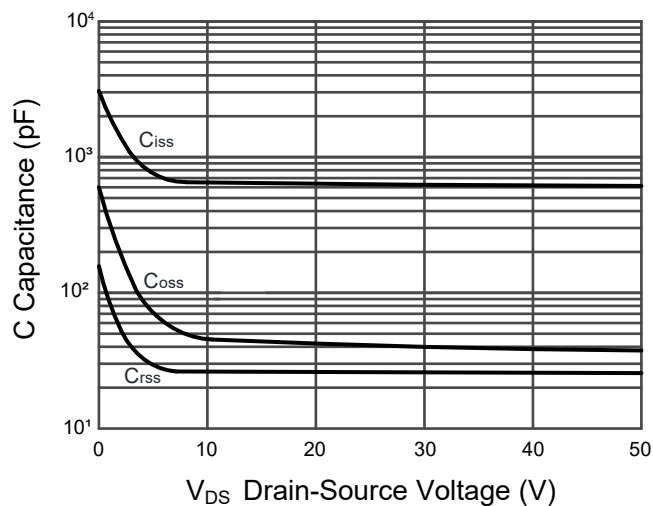
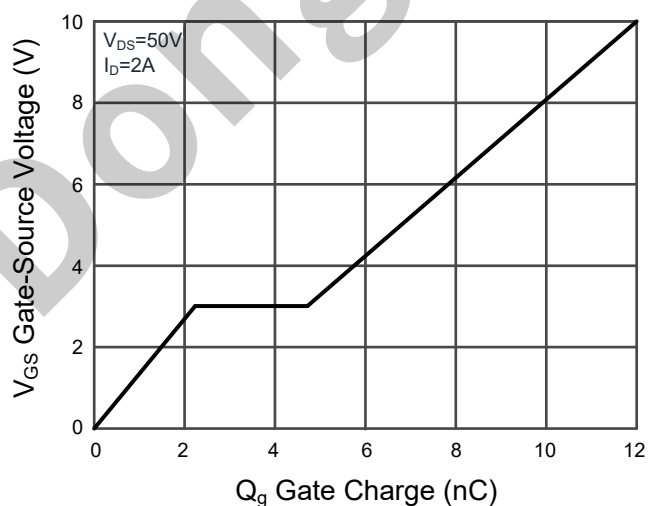
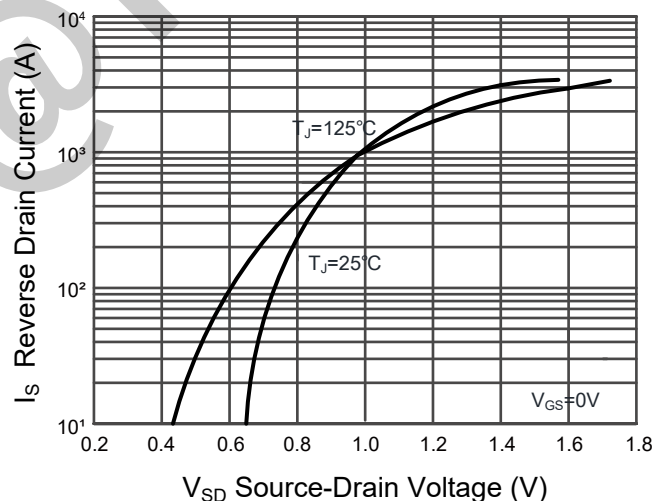
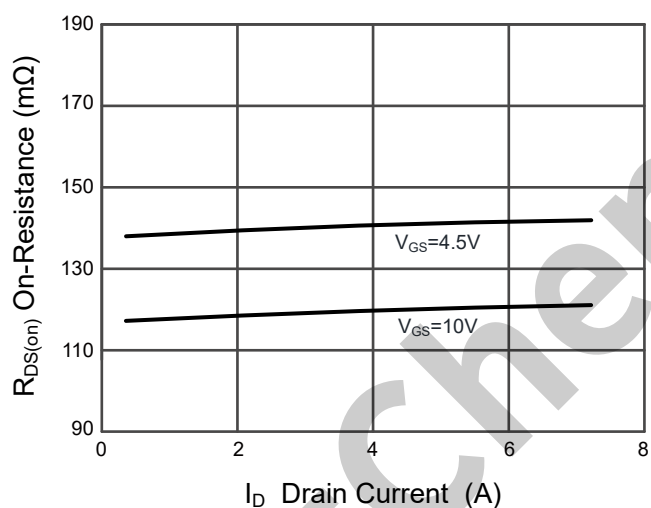
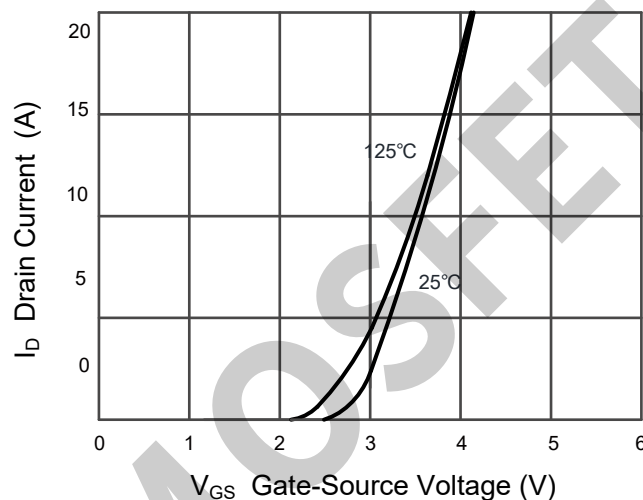
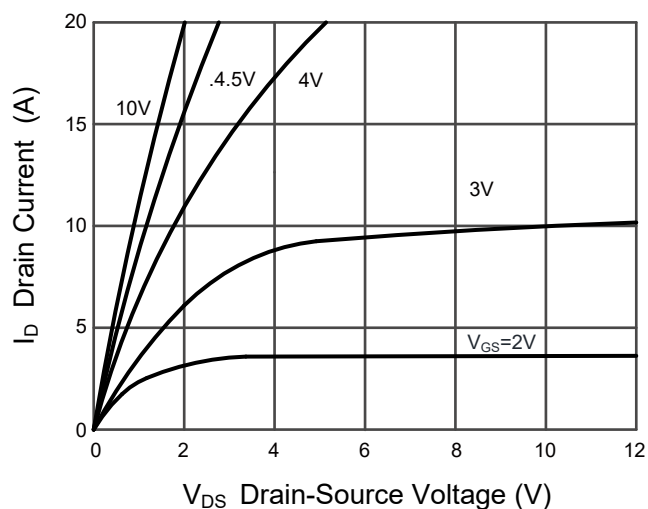
Thermal Characteristics

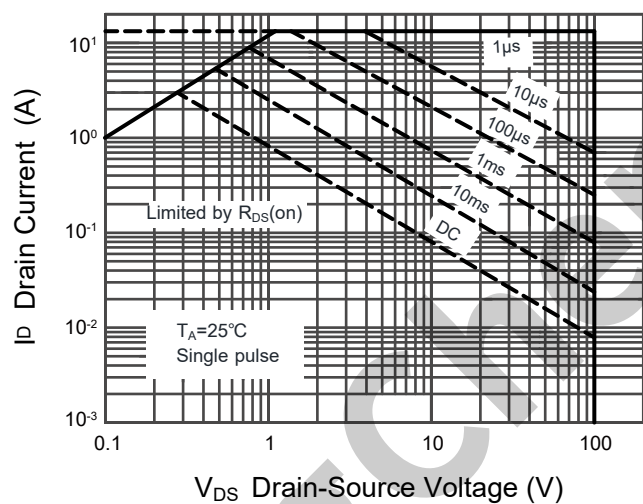
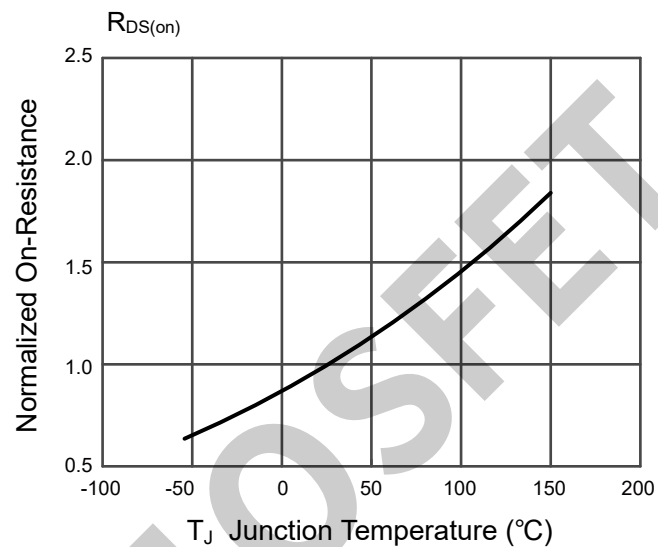
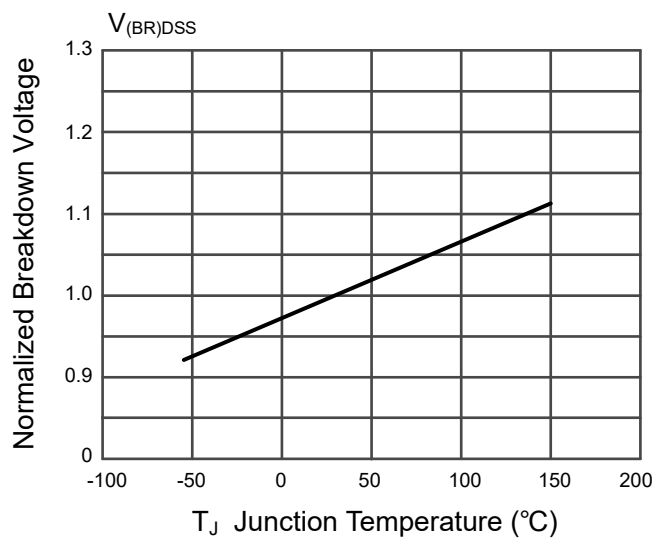
Parameter	Symbol	Typ.	Max.	Unit
Thermal Resistance, Junction-to-Ambient ⁽³⁾	R _{θJA}	-	66	°C/W

Electrical Characteristics (@ $T_J = 25^\circ\text{C}$, unless otherwise specified.)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Off Characteristics ⁽⁴⁾						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	VGS=0V, ID=250μA	100	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	VDS=100V, VGS = 0V,TJ=25°C	-	-	1	μA
Gate-Source Leakage Current	I _{GSS}	VGS=±20V, VDS = 0V	-	-	100	nA
On Characteristics ⁽⁴⁾						
Gate Threshold Voltage	V _{GS(th)}	VDS=VGS, ID=250μA	1.0	1.5	2.5	V
Static Drain-Source On-Resistance	R _{DS(ON)}	VGS=4.5V, ID=3A	-	-	140	mΩ
		VGS=10V, ID=4A	-	-	120	mΩ
Diodes Forward Voltage	V _{SD}	IS=5A, VGS=0V	-	-	1.2	V
Dynamic Characteristics ⁽⁴⁾						
Input Capacitance	C _{iss}	VDS=25V, VGS=0V, f=1MHz	-	610	-	pF
Output Capacitance	C _{oss}		-	40	-	pF
Reverse Transfer Capacitance	C _{rss}		-	25	-	pF
Switching Characteristics ⁽⁵⁾						
Turn-On DelayTime	t _{d(on)}	VGS=10V, VDD=50V, ID=3A, RGEN=1.8Ω	-	7	-	ns
Rise Time	t _r		-	5	-	ns
Turn-Off DelayTime	t _{d(off)}		-	16	-	ns
Fall Time	t _f		-	6	-	ns
Gate Charge Characteristics ⁽⁵⁾						
Total Gate Charge	Q _g	VDS=50V,ID=2A, VGS=10V	-	12	-	nC
Gate-Source Charge	Q _{gs}		-	2.2	-	nC
Gate-Drain Charge	Q _{gd}		-	2.5	-	nC
Drain-Source Diode Characteristics ⁽⁵⁾						
Diode Forward Current	I _s	TA = 25°C	-	-	5	A
Drain to Source Diode Forward Voltage	V _{SD}	VGS=0V	-	-	1.2	V
Notes: 1. This current is chip limited, which is calculated based on Rthja. 2. This current is calculated on single pulse with 10μs Single Pulse . 3. Device mounted on FR-4 substrate PC board with 2oz copper in 1inch square cooling area. 4. Short duration pulse test used to minimize self-heating effect. 5. Defined by design, not subject to production.						

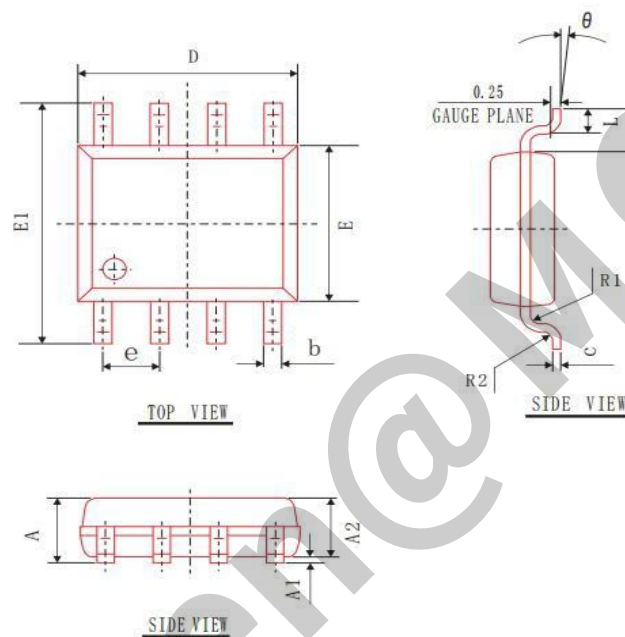
Typical Characteristic Curves





Outline Drawing

SOP8



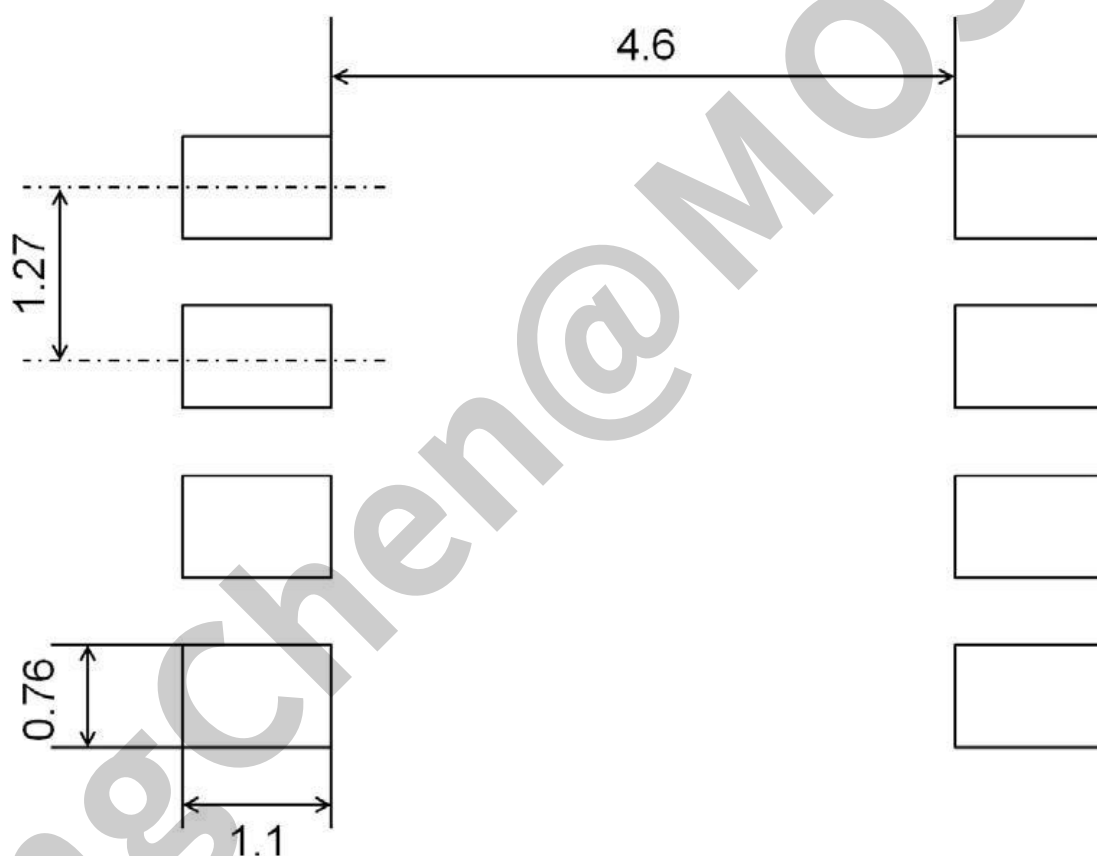
COMMON DIMENSIONS
(UNITS OF MEASURE=mm)

SYMBOL	MIN	NOM	MAX
A	1.40	1.60	1.80
A1	0.05	0.15	0.25
A2	1.35	1.45	1.55
b	0.30	0.40	0.50
c	0.153	0.203	0.253
D	4.80	4.90	5.00
E	3.80	3.90	4.00
E1	5.80	6.00	6.20
L	0.45	0.70	1.00
θ	2°	4°	6°
L1	1.04 REF		
e	1.27 BSC		
R1	0.07 TYP		
R2	0.07 TYP		

Dimensions in inches and (millimeters)

Suggested Soldering Pad Layout

SOP8



Dimensions in inches and (millimeters)

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