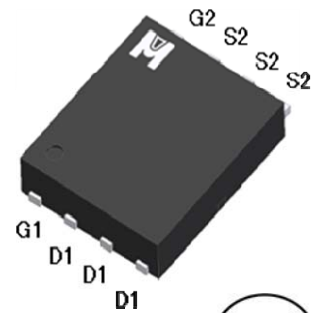
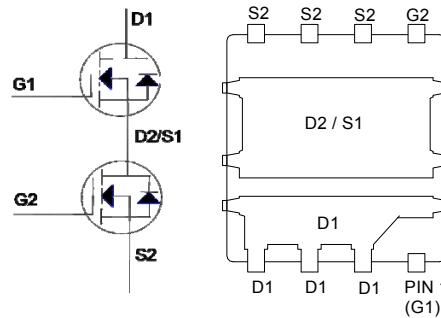




N-Channel Logic Level Enhancement Mode Field Effect Transistor

Product Summary:

	N-CH-Q1	N-CH-Q2
BV _{DSS}	30V	30V
R _{DS(on)} (MAX.)	15mΩ	9.5mΩ
I _D	12A	15A



UIS, R_g 100% Tested

Pb-Free Lead Plating & Halogen Free

ABSOLUTE MAXIMUM RATINGS (T_C = 25 °C Unless Otherwise Noted)

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS		UNIT
			Q1	Q2	
Gate-Source Voltage		V _{GS}	±20	±20	V
Continuous Drain Current	T _C = 25 °C	I _D	12	15	A
	T _C = 100 °C		9.6	12	
Pulsed Drain Current ¹		I _{DM}	48	60	
Avalanche Current		I _{AS}	12	15	
Avalanche Energy	L = 0.1mH, R _G =25Ω	E _{AS}	7.2	11.25	mJ
Repetitive Avalanche Energy ²	L = 0.05mH	E _{AR}	3.6	5.62	
Power Dissipation	T _C = 25 °C	P _D	48	69	W
	T _C = 100 °C		19	27	
Operating Junction & Storage Temperature Range		T _j , T _{stg}	-55 to 150		°C

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL		TYPICAL	MAXIMUM		UNIT
	R _{θJC}	Steady State				
Junction-to-Case	R _{θJC}	Steady State		2.6	1.8	°C / W
Junction-to-Ambient	R _{θJA}	Steady State		62	60	
	R _{θJA}	t ≤ 10 s		27	25	

¹Pulse width limited by maximum junction temperature.

²Duty cycle ≤ 1%

R_{θJA} when mounted on a 1 in² pad of 2 oz copper.



ELECTRICAL CHARACTERISTICS (T_c = 25 °C, Unless Otherwise Noted)

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNIT	
			MIN	TYP	MAX		
STATIC							
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = 250μA	Q1	30		V	
			Q2	30			
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	Q1	1	1.5	3	
			Q2	1	1.5	3	
Gate-Body Leakage	I _{GSS}	V _{DS} = 0V, V _{GS} = ±20V	Q1			±100	nA
			Q2			±100	
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 24V, V _{GS} = 0V	Q1			1	μA
			Q2			1	
		V _{DS} = 20V, V _{GS} = 0V, T _J = 125 °C	Q1			25	
			Q2			25	
On-State Drain Current ¹	I _{D(ON)}	V _{DS} = 10V, V _{GS} = 10V	Q1	12		A	
			Q2	15			
Drain-Source On-State Resistance ¹	R _{DS(ON)}	V _{GS} = 10V, I _D = 8A	Q1		12.5	15	mΩ
		V _{GS} = 10V, I _D = 10A	Q2		8.2	9.5	
		V _{GS} = 4.5V, I _D = 5A	Q1		18.9	26	
		V _{GS} = 4.5V, I _D = 6A	Q2		11	15	
Forward Transconductance ¹	g _{fs}	V _{DS} = 5V, I _D = 8A	Q1		15	S	
		V _{DS} = 5V, I _D = 10A	Q2		18		
DYNAMIC							
Input Capacitance	C _{iss}	V _{GS} = 0V, V _{DS} = 15V, f = 1MHz	Q1		597	pF	
			Q2		828		
Output Capacitance	C _{oss}		Q1		111		
			Q2		196		
Reverse Transfer Capacitance	C _{rss}		Q1		96		
			Q2		174		
Gate Resistance	R _g	V _{GS} = 15mV, V _{DS} = 0V, f = 1MHz	Q1		2.0	Ω	
			Q2		1.7		
Total Gate Charge ^{1,2}	Q _g (V _{GS} =10V)	V _{DD} = 15V, V _{GS} = 10V, I _D = 10A	Q1		14	nC	
			Q2		17.6		
	Q _g (V _{GS} =4.5V)		Q1		8		
			Q2		12.5		



Gate-Source Charge ^{1,2}	Q _{gs}	V _{DD} = 15V, V _{GS} = 10V, I _D = 10A	Q1		1.8	
			Q2		2.8	
Gate-Drain Charge ^{1,2}	Q _{gd}		Q1		4.7	
			Q2		7.4	
Turn-On Delay Time ^{1,2}	t _{d(on)}		Q1		6	nS
			Q2		8	
Rise Time ^{1,2}	t _r	V _{DD} = 15V, I _D = 1A, V _{GS} = 10V, R _{GS} = 2.7Ω	Q1		8	
			Q2		18	
Turn-Off Delay Time ^{1,2}	t _{d(off)}		Q1		18	
			Q2		20	
Fall Time ^{1,2}	t _f		Q1		10	
			Q2		12	
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_c = 25 °C)						
Continuous Current	I _S		Q1		12	A
			Q2		15	
Pulsed Current ³	I _{SM}		Q1		48	
			Q2		60	
Forward Voltage ¹	V _{SD}	I _F = 8A, V _{GS} = 0V I _F = 10A, V _{GS} = 0V	Q1		1.3	V
			Q2		1.3	
Reverse Recovery Time	t _{rr}	Q1 I _F = 8A, dI _F /dt = 100A / μS	Q1		18	nS
			Q2		22	
Reverse Recovery Charge	Q _{rr}	Q2 I _F = 10A, dI _F /dt = 100A / μS	Q1		5	nC
			Q2		6	

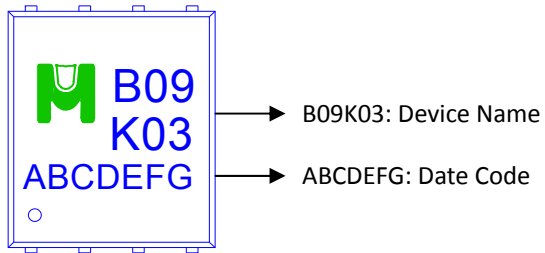
¹Pulse test : Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%.

²Independent of operating temperature.

³Pulse width limited by maximum junction temperature.

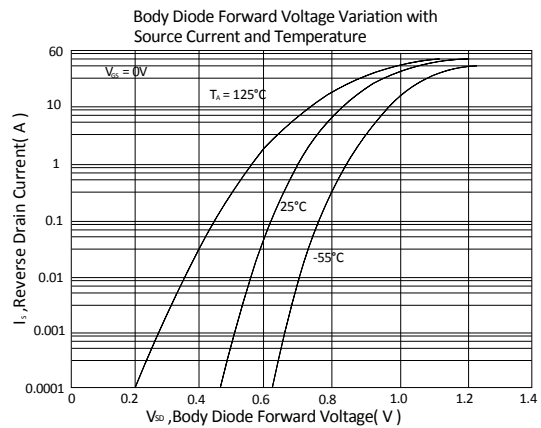
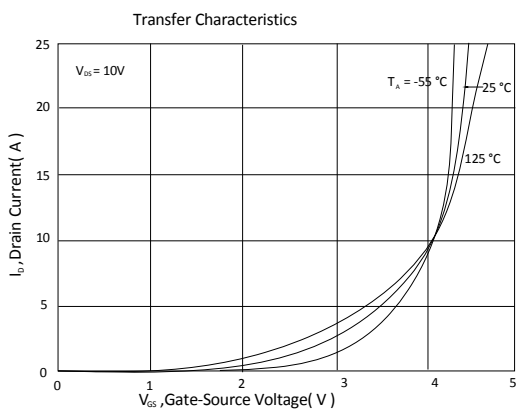
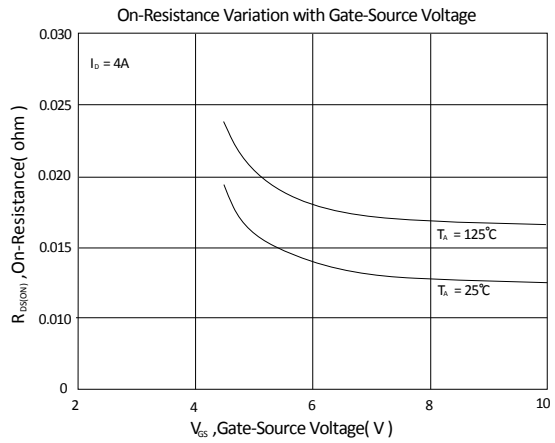
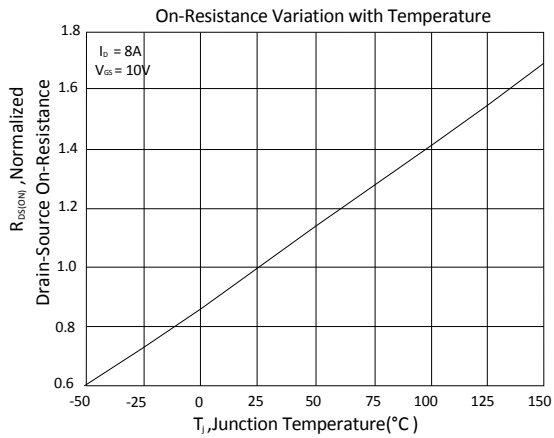
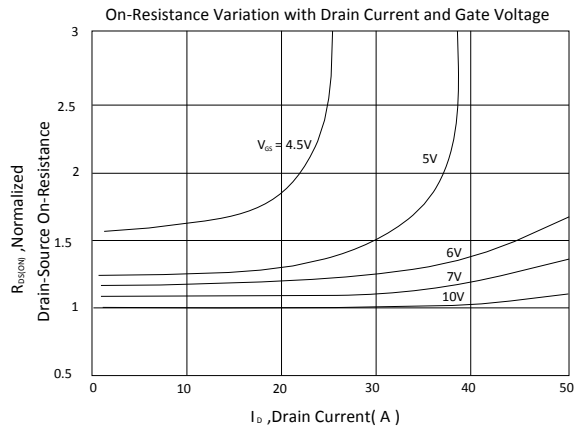
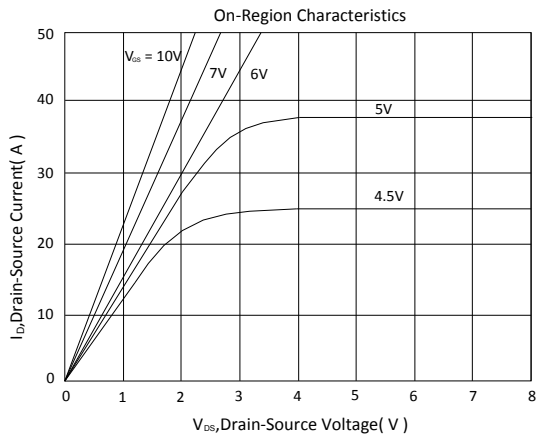
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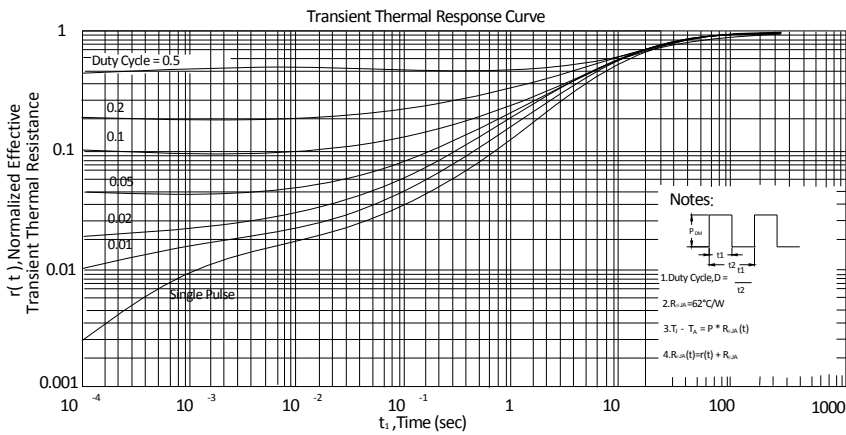
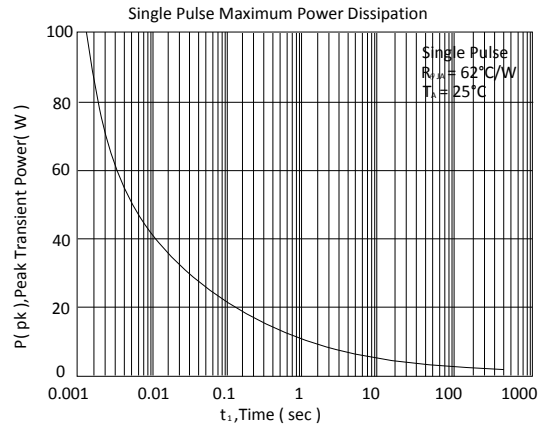
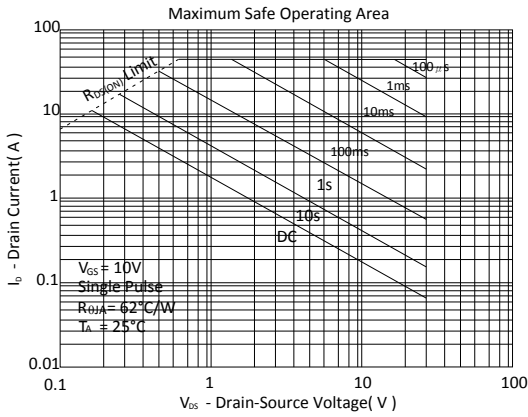
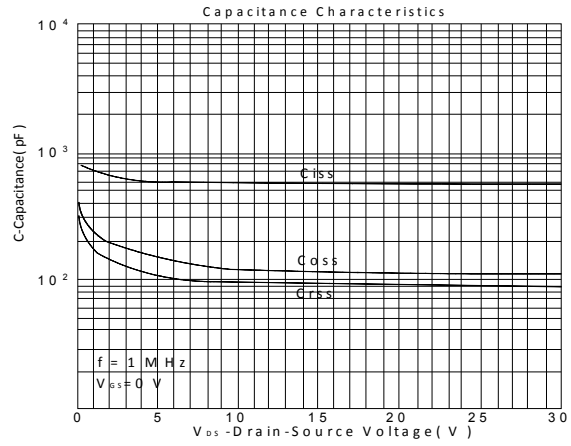
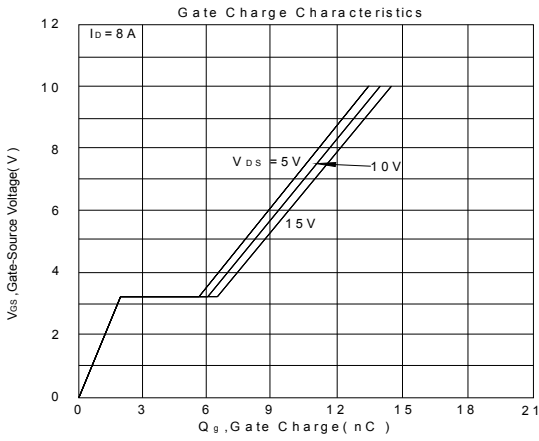
Device Name: EMB09K03HP for Asymmetric Dual EDFN 5 x 6





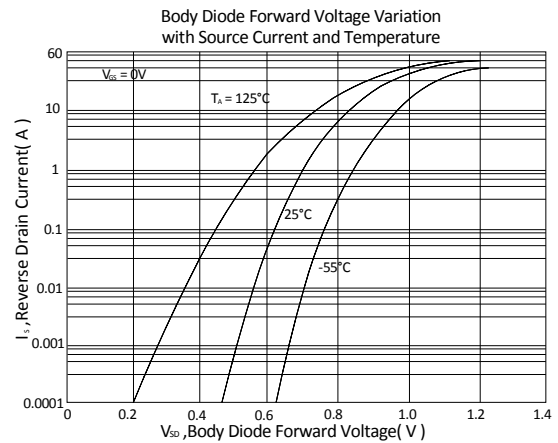
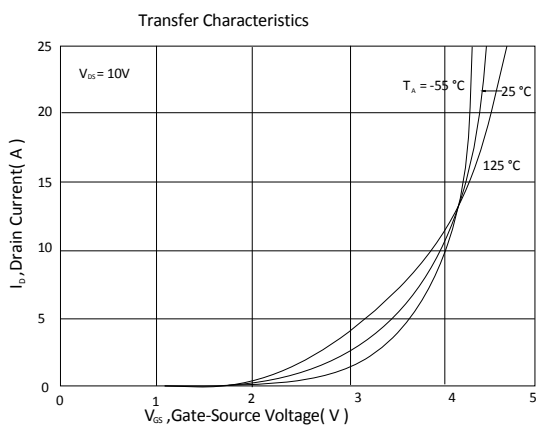
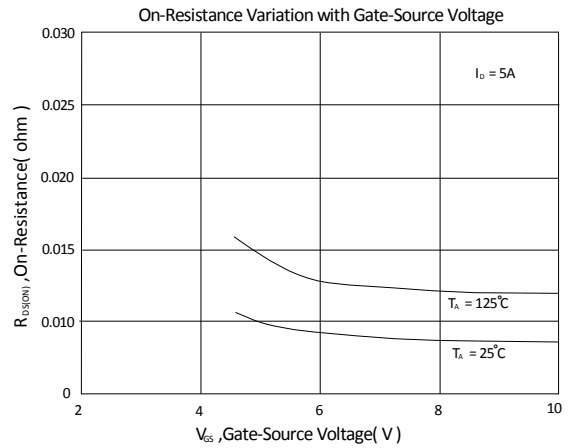
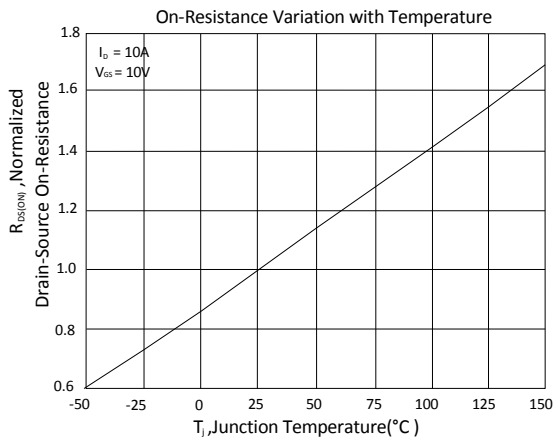
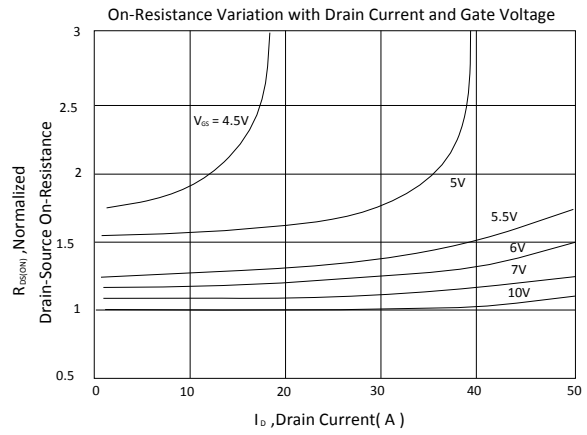
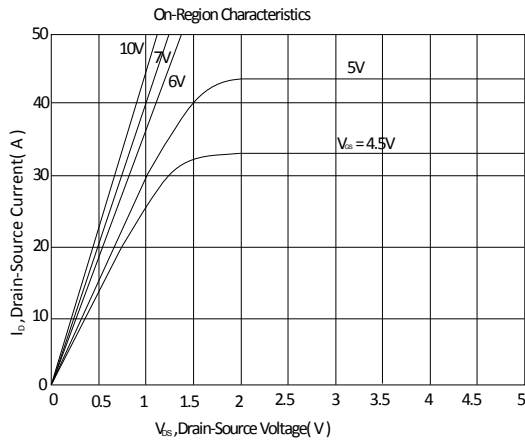
Q1 TYPICAL CHARACTERISTICS

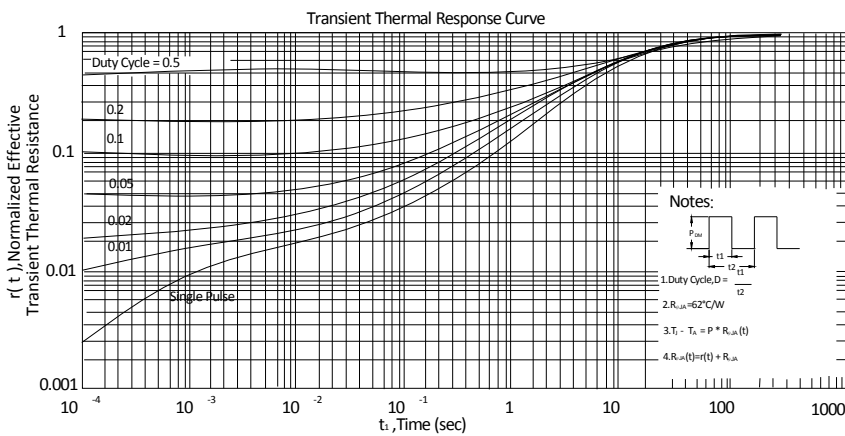
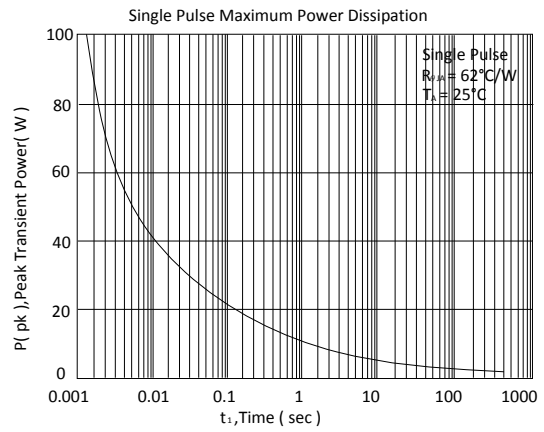
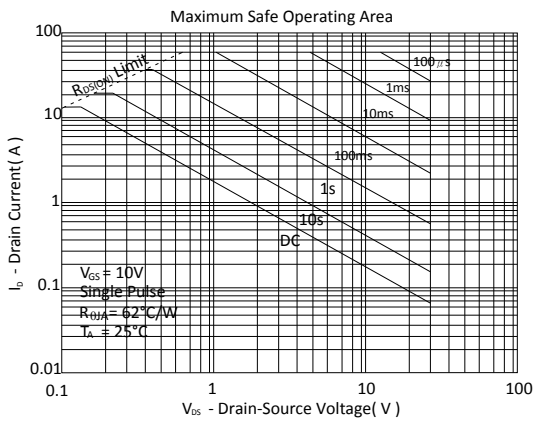
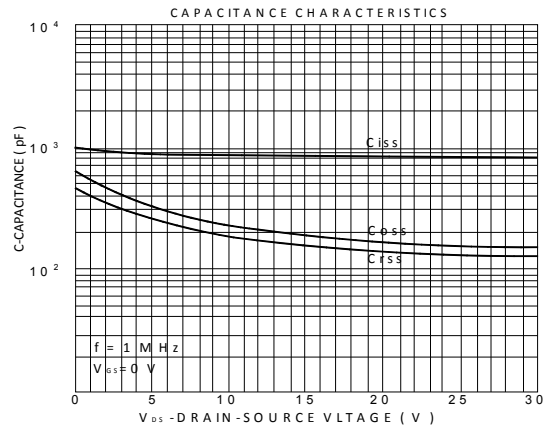
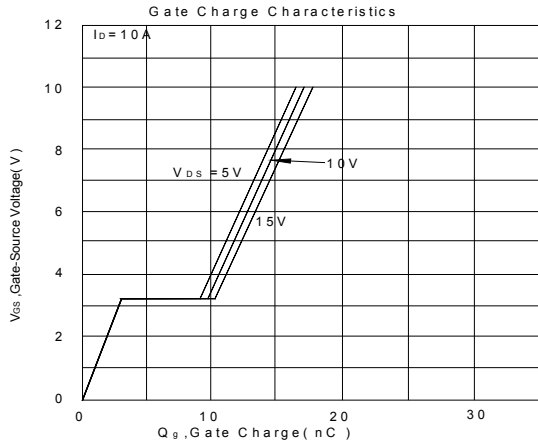






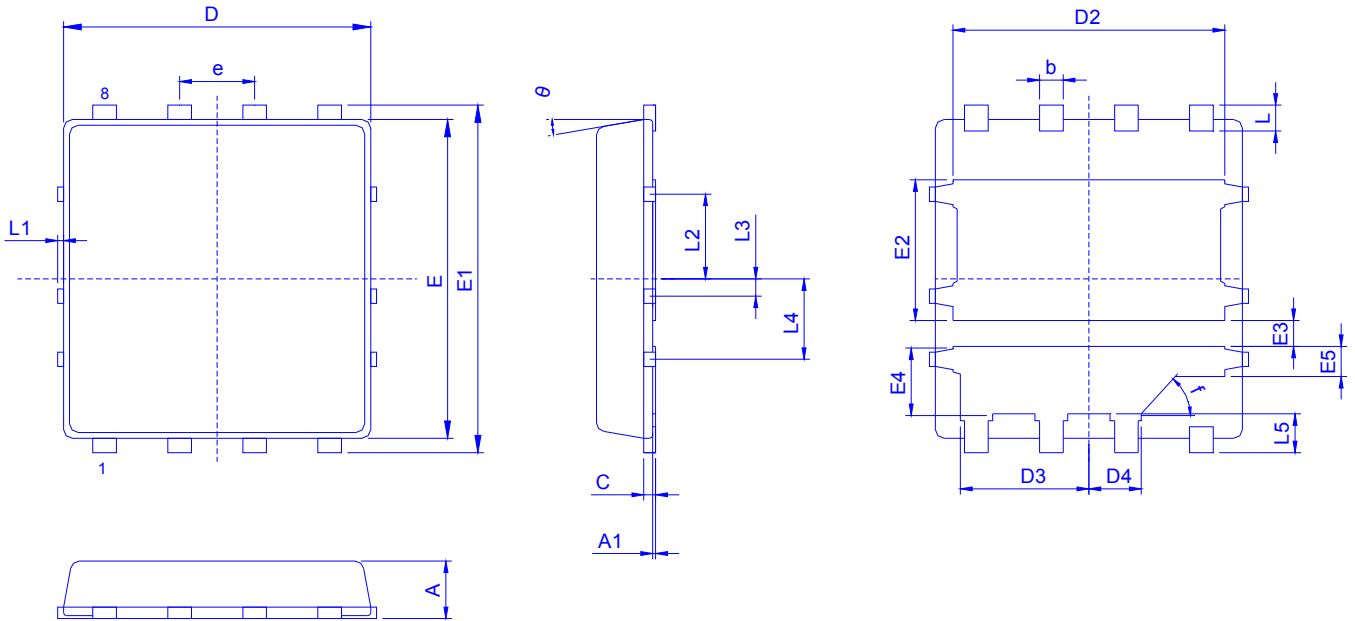
Q2 TYPICAL CHARACTERISTICS







Outline Drawing



Dimension in mm

Dimension	A	A1	b	c	D	D2	D3	D4	E	E1	E2	E3	E4	E5
Min.	0.85	0.00	0.35	0.15		4.5	2.125	0.835			2.4	0.40	1.125	0.475
Typ.	0.90		0.40	0.20	5.2	4.6	2.175	0.885	5.55	6.05	2.45	0.45	1.175	0.525
Max.	1.00	0.05	0.45	0.25		4.7	2.225	0.935			2.5	0.50	1.225	0.575

Dimension	e	L	L1	L2	L3	L4	L5	F	θ
Min.		0.35	0	1.375	0.2	1.3	0.575		0°
Typ.	1.27	0.45		1.475	0.3	1.4	0.675	45°	
Max.		0.55	0.1	1.575	0.4	1.5	0.775		10°

Recommended minimum pads

