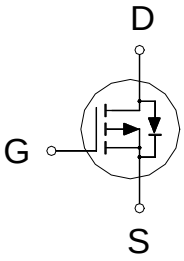
杰力科技股份有限公司
Excelliance MOS Corporation

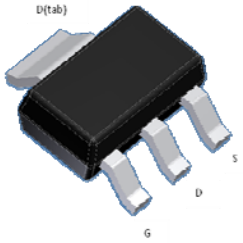
EMB44P04Q

P-Channel Logic Level Enhancement Mode Field Effect Transistor

Product Summary:

BV_{DSS}	-40V
$R_{DSON\ (MAX.)}$	44mΩ
I_D	-6A





UIS, Rg 100% Tested

Pb-Free Lead Plating & Halogen Free

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

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNIT
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	T_C = 25 °C	I_D	-6	A
	T_C = 100 °C		-4	
Pulsed Drain Current[1]		I_{DM}	-24	
Avalanche Current		I_{AS}	-6	
Avalanche Energy	L = 0.1mH, I_D=-6A, R_G=25Ω	E_{AS}	1.8	mJ
Repetitive Avalanche Energy[2]	L = 0.05mH	E_{AR}	0.9	
Power Dissipation	T_C = 25 °C	P_D	3.125	W
	T_C = 100 °C		1.25	
Operating Junction & Storage Temperature Range		T_j, T_{stg}	-55 to 150	°C

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNIT
Junction-to-Case	$R_{\theta JC}$		40	°C / W
Junction-to-Ambient[3]	$R_{\theta JA}$		60	

[1]Pulse width limited by maximum junction temperature.

[2]Duty cycle ≤ 1%

[3]60°C / W when mounted on a 1 in^2 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	-40			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = -250μA	-1.0	-2.0	-3.0	
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±20V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = -32V, V_{GS} = 0V			-1	μA
		V_{DS} = -30V, V_{GS} = 0V, T_J = 125 °C			-10	
On-State Drain Current[1]	$I_{D(ON)}$	V_{DS} = -5V, V_{GS} = -10V	-6			A
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = -10V, I_D = -6A		38	44	mΩ
		V_{GS} = -4.5V, I_D = -3A		55	75	
Forward Transconductance[1]	g_{fs}	V_{DS} = -5V, I_D = -6A		11		S
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = -20V, f = 1MHz		810		pF
Output Capacitance	C_{oss}			94		
Reverse Transfer Capacitance	C_{rss}			72		
Gate Resistance	R_g	V_{GS} = 15mV, V_{DS} = 0V, f = 1MHz		5.5		Ω
Total Gate Charge[1,2]	Q_g	V_{DS} = -20V, V_{GS} = -10V, I_D = -6A		15		nC
Gate-Source Charge[1,2]	Q_{gs}			2.6		
Gate-Drain Charge[1,2]	Q_{gd}			3.1		
Turn-On Delay Time[1,2]	$t_{d(on)}$	V_{DS} = -20V, I_D = -1A, V_{GS} = -10V, R_{GS} = 2.7Ω		12		nS
Rise Time[1,2]	t_r			15		
Turn-Off Delay Time[1,2]	$t_{d(off)}$			25		
Fall Time[1,2]	t_f			15		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_C = 25 °C)						
Continuous Current	I_S				-2.5	A
Pulsed Current[3]	I_{SM}				-10	
Forward Voltage[1]	V_{SD}	I_F = I_S A, V_{GS} = 0V			-1.2	V
Reverse Recovery Time	t_{rr}	I_F = I_S, dI_F/dt = 100A / μS		15		nS
Reverse Recovery Charge	Q_{rr}			8		nC

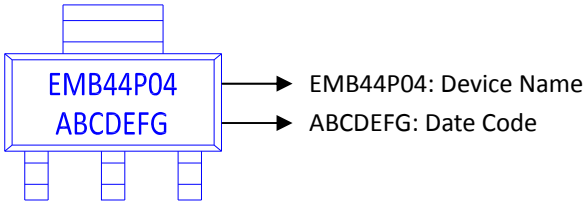
[1]Pulse test : Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%.

[2]Independent of operating temperature.

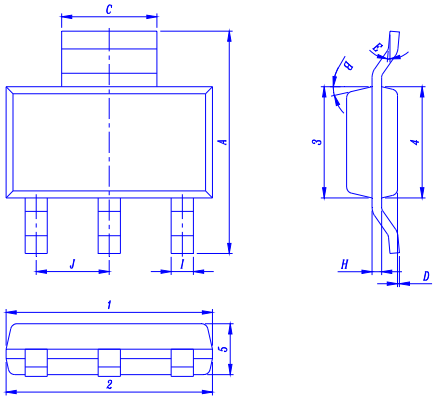
[3]Pulse width limited by maximum junction temperature.

Ordering & Marking Information:

Device Name: EMB44P04Q for SOT-223



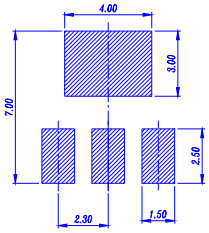
Outline Drawing



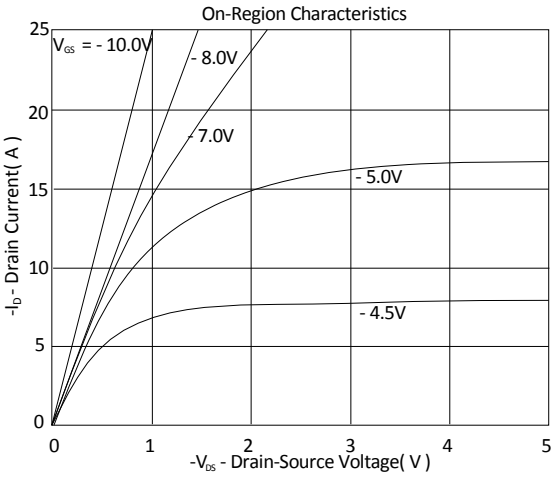
Dimension in mm

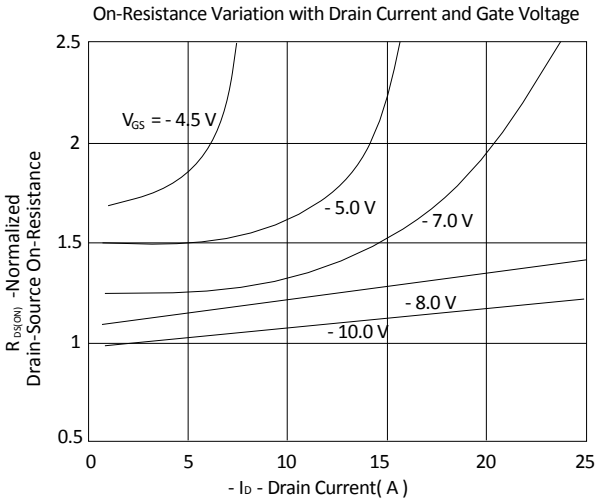
Dimension	A	C	D	E	I	H	B	J	1	2	3	4	5
Min.	6.70	2.90	0.02	0°	0.60	0.25			6.30	63.0	3.30	3.30	1.40
Typ.							13°	2.30					
Max.	7.30	3.10	0.10	10°	0.80	0.35			6.70	6.70	3.70	3.70	1.80

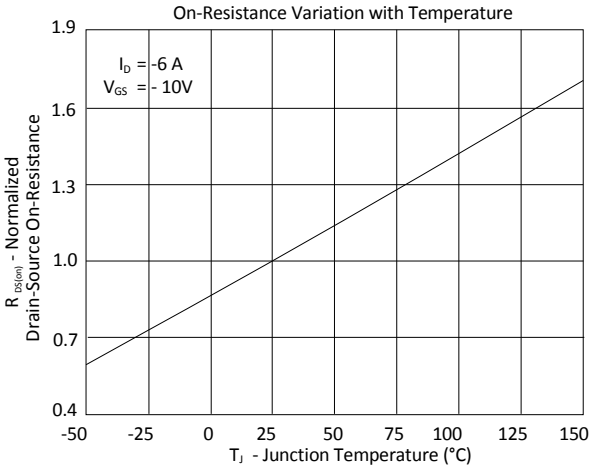
Recommended minimum pads

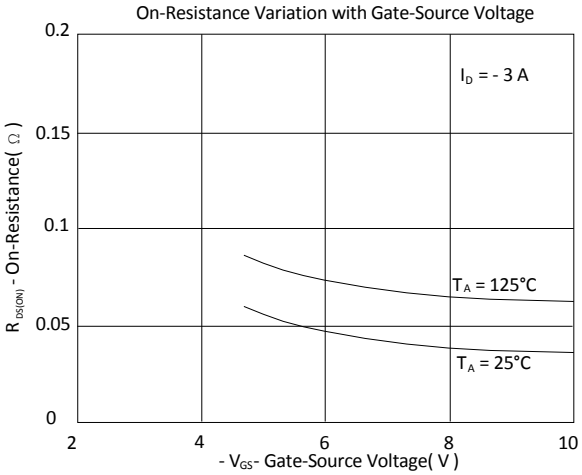


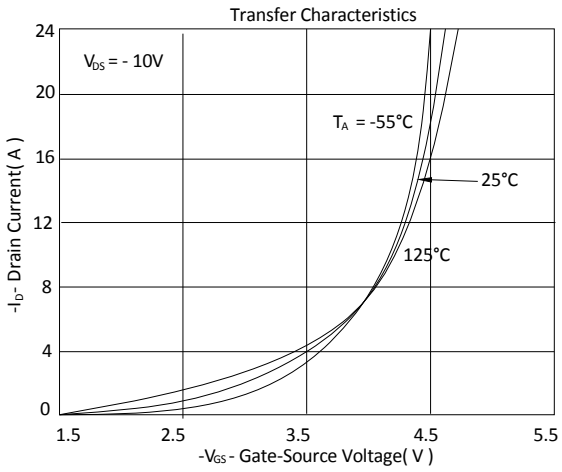
TYPICAL CHARACTERISTICS

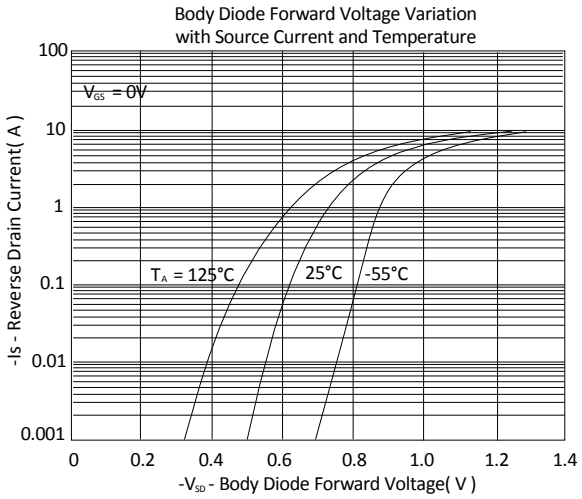




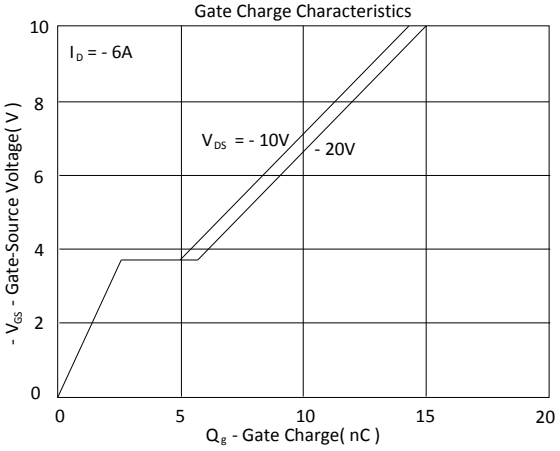




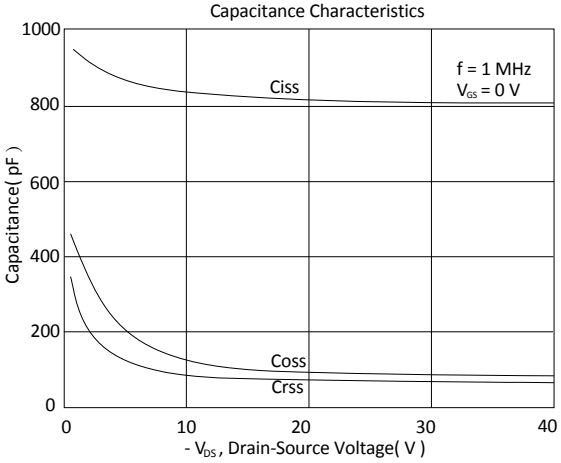




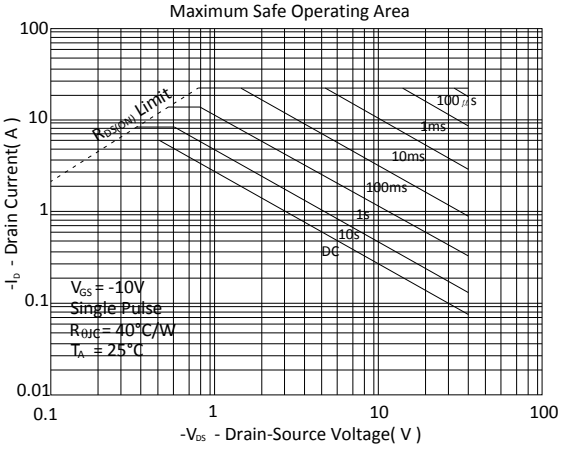
Gate Charge Characteristics



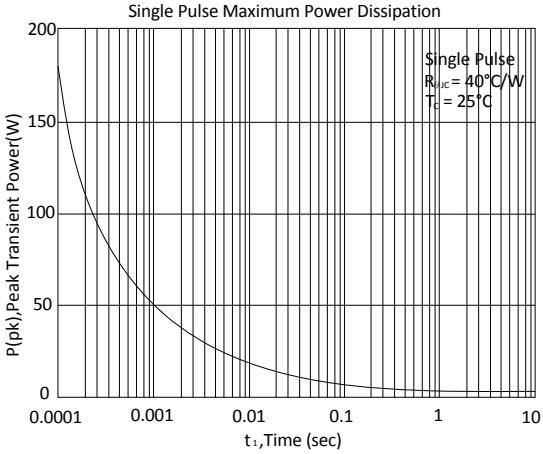
Capacitance Characteristics



Maximum Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve