UNIKC Semiconductor

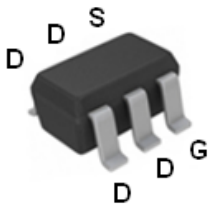
RoHS Compliant

P5103EAG

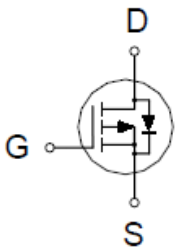
P-Channel Enhancement Mode MOSFET

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
-30V	51mΩ @V_{GS} = -10V	-5A



TSOP- 06



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

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Drain-Source Voltage		V_{DS}	-30	V
Gate-Source Voltage		V_{GS}	±20	
Drain-Gate Voltage (R_{GS}=20KΩ）		V_{DG}	-30	
Continuous Drain Current	T_A = 25 °C	I_D	-5	A
	T_A = 70 °C		-4.2	
Pulsed Drain Current[1]		I_{DM}	-20	
Power Dissipation	T_A = 25 °C	P_D	2.0	W
	T_A = 70 °C		1.4	
Operating Junction & Storage Temperature Range		T_J, T_{STG}	-55 to 150	°C

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE		SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Ambient	t≦5sec	$R_{\theta JA}$		62.5	°C / W
Junction-to-Ambient	Steady State	$R_{\theta JA}$		110	
Junction-to-Lead	Steady State	$R_{\theta JL}$		50	

[1]Pulse width limited by maximum junction temperature.

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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	-30			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = -250μA	-1.00	-1.80	-3.00	
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±20V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = -24V, V_{GS} = 0V			-1	μA
		V_{DS} = -20V, V_{GS} = 0V , T_J = 125 °C			-10	
On-State Drain Current[1]	$I_{D(ON)}$	V_{DS} = -5V, V_{GS} = -10V	-20			A
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = -4.5V, I_D = -4A		66	85	mΩ
		V_{GS} = -10V, I_D = -5A		42	51	
Forward Transconductance[1]	g_{fs}	V_{DS} = -10V, I_D = -5A		10		S
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = -10V, f = 1MHz		700		pF
Output Capacitance	C_{oss}			120		
Reverse Transfer Capacitance	C_{rss}			75		
Total Gate Charge[2]	Q_g	V_{DS} = 0.5$V_{(BR)DSS}$, V_{GS} = -10V, I_D = -5A		12.5		nC
Gate-Source Charge[2]	Q_{gs}			2.1		
Gate-Drain Charge[2]	Q_{gd}			3.5		
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DS} = -15V, I_D ≅ -1A, V_{GEN} = -10V, R_{GS} = 6Ω		7		nS
Rise Time[2]	t_r			10		
Turn-Off Delay Time[2]	$t_{d(off)}$			30		
Fall Time[2]	t_f			22		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICE (T_C = 25 ˚C)						
Continuous Current	I_S				-3	A
Pulsed Current[3]	I_{SM}				-6	
Forward Voltage[1]	V_{SD}	I_F = -1A, V_{GS} = 0V			-1	V
Reverse Recovery Charge	Q_{rr}			13.4		nC

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

[2]Independent of operating temperature.

[3]Pulse width limited by maximum junction temperature.

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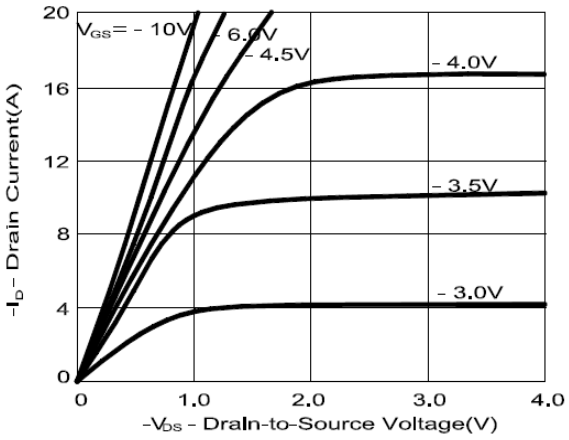
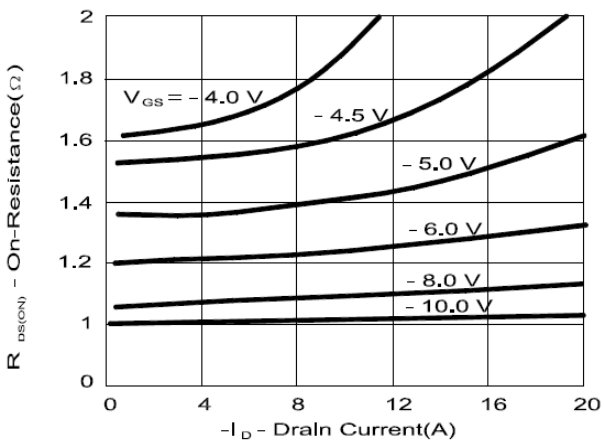
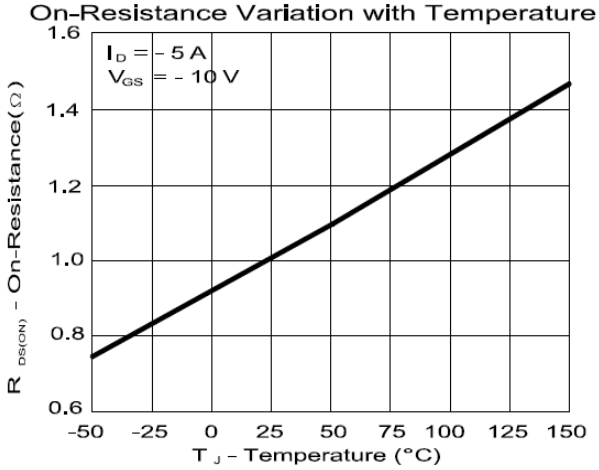
Output Characteristics



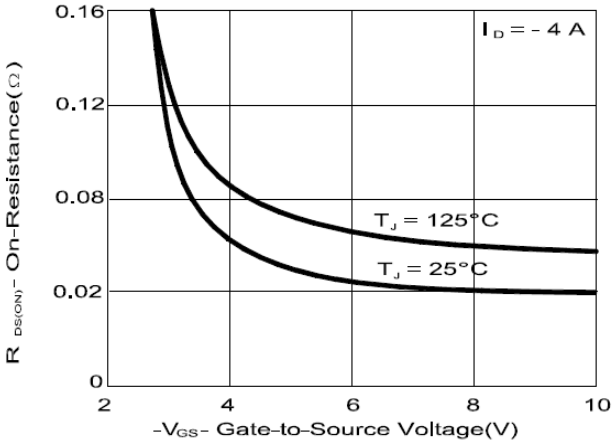
On-Resistance vs. Drain Current



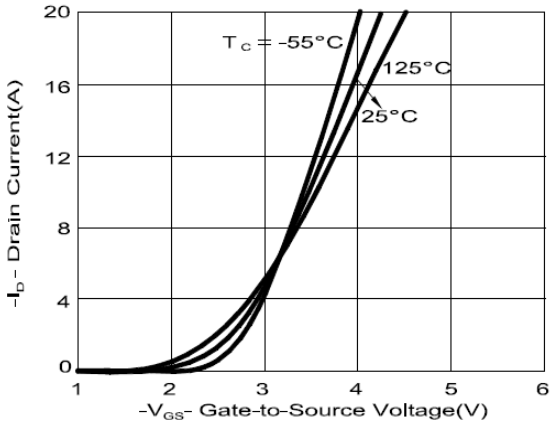
On-Resistance Variation with Temperature



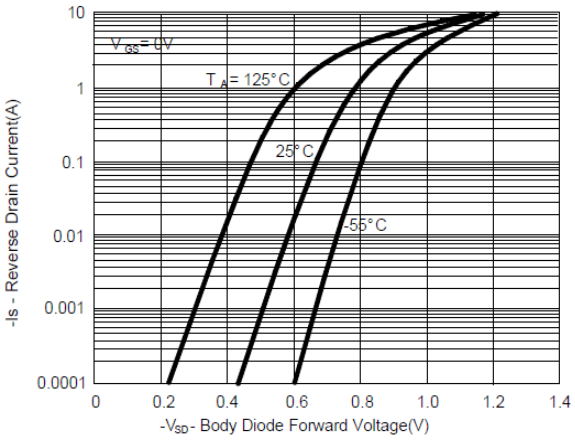
On-Resistance vs. Gate-to-Source Voltage



Transfer Characteristics



Body Diode Forward Voltage Variation with Source Current and Temperature



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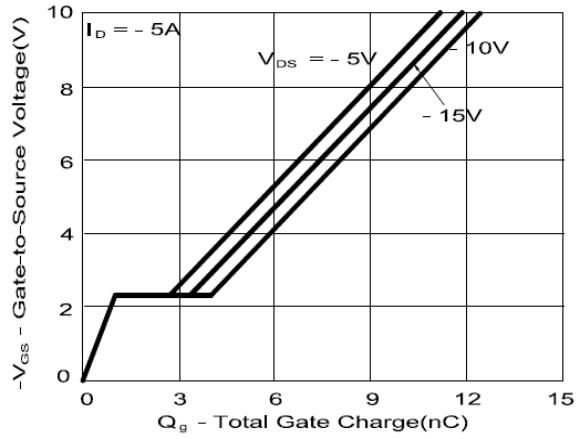
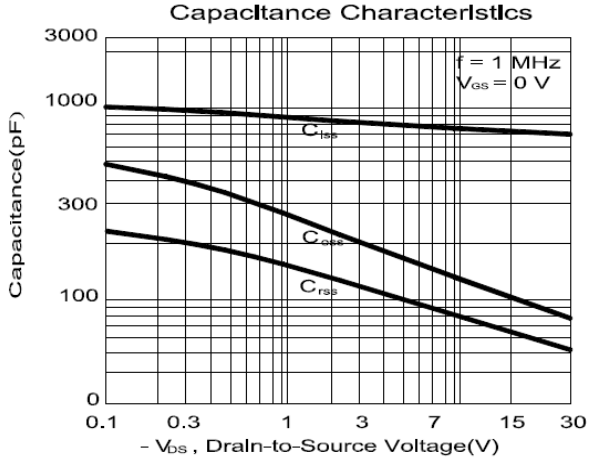
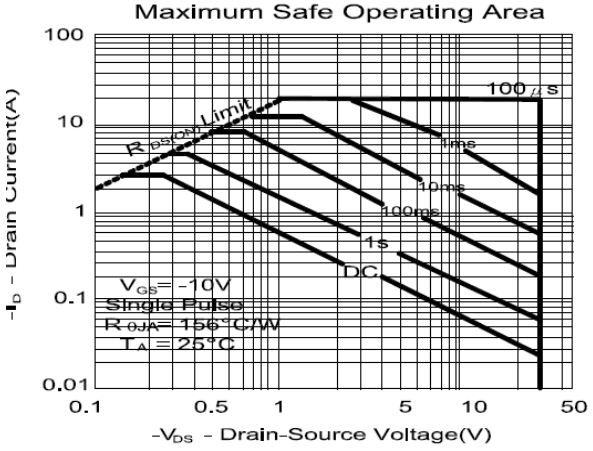
Gate Charge



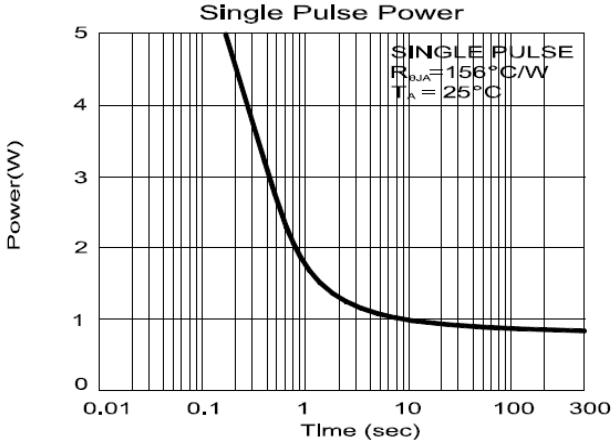
Capacitance Characteristics



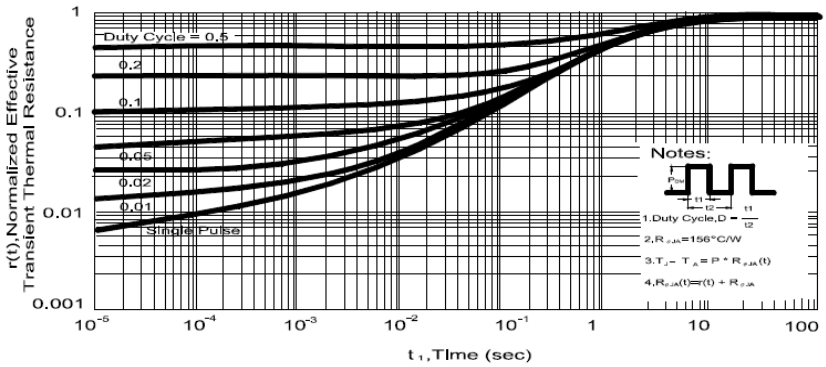
Maximum Safe Operating Area



Single Pulse Power



Transient Thermal Response Curve



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Package Dimension

TSOP- 6 MECHANICAL DATA

Dimension	mm			Dimension	mm		
	Min.	Typ.	Max.		Min.	Typ.	Max.
A	0.9		1	H	0.08		0.2
B	2.6		3	I	0.33		0.57
C	1.5		1.7	J			
D	2.8		3.02	K			
E	0.7		0.85	L			
F	0		0.1	M			
G	0.35		0.5	N