



Micro Commercial Components



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MCAC50P03

P-Channel Power MOSFET

Features

- High density cell design for ultra low $R_{DS(ON)}$
- Fully characterized avalanche voltage and current
- Halogen free available upon request by adding suffix "-HF"
- Good stability and uniformity with high E_{AS}
- Excellent package for good heat dissipation
- Special process technology for high ESD capability
- Epoxy meets UL 94 V-0 flammability rating
- Moisture Sensitivity Level 1

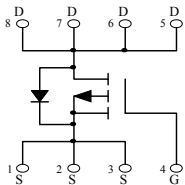
Maximum Ratings @ 25°C Unless Otherwise Specified

Symbol	Parameter	Rating	Unit
V_{DS}	Drain-source Voltage	-30	V
I_D	Drain Current-Continuous(note1)	-50	A
I_{DM}	Pulsed Drain Current	-70	A
V_{GS}	Gate-source Voltage	± 20	V
E_{AS}	Single Pulsed Avalanche Energy(note2)	300	mJ
P_D	Total Power Dissipation	2.0	W
$R_{\theta JA}$	Thermal Resistance Junction to Ambient(note1)	62.5	$^{\circ}C/W$
T_J	Operating Junction Temperature	-55 to +150	$^{\circ}C$
T_{STG}	Storage Temperature	-55 to +150	$^{\circ}C$
T_L	Maximum lead temperature for soldering purposes, 1/8" from case for 5 seconds	260	$^{\circ}C$

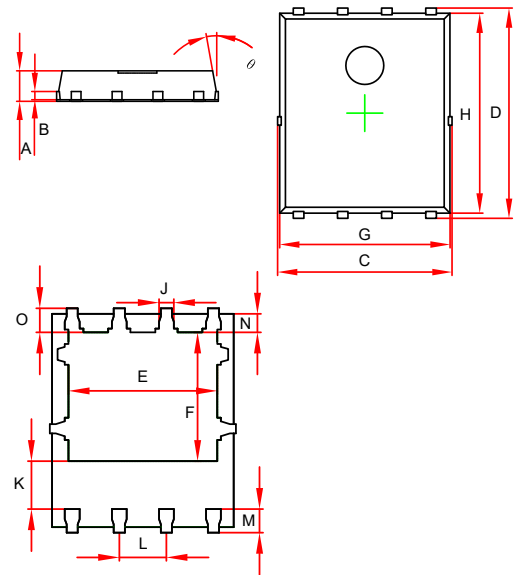
(1). Mounted on a glass epoxy board of 25.4 mm x 25.4 mm x 0.8 mm

(2). EAS condition: $V_{DD}=15V, L=0.5mH, R_G=25\Omega$, Starting $T_J = 25^{\circ}C$

EQUIVALENT CIRCUIT



DFN5060



DIM	Dimensions				NOTE
	INCHES		MM		
	MIN	MAX	MIN	MAX	
A	0.035	.039	0.900	1.000	
B	0.010REF.		0.254REF.		
C	0.195	0.201	4.944	5.096	
D	0.235	0.241	5.974	6.126	
E	0.154	0.162	3.910	4.110	
F	0.133	0.141	3.375	3.575	
G	0.190	0.196	4.824	4.976	
H	0.223	0.229	5.674	5.826	
K	0.047	0.055	1.190	1.390	
J	0.014	0.018	0.350	0.450	
L	0.050TYP.		1.270TYP.		
M	0.022	0.028	0.559	0.711	
N	0.017	0.023	0.424	0.576	
O	0.023	0.029	0.574	0.726	
θ	10 $^{\circ}$	12 $^{\circ}$	10 $^{\circ}$	12 $^{\circ}$	

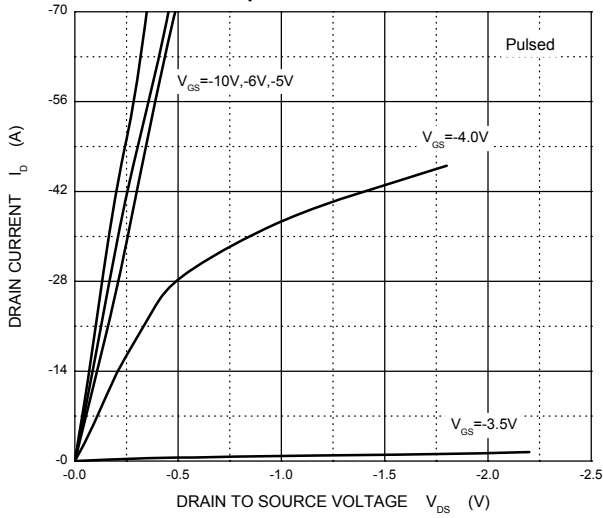
ELECTRICAL CHARACTERISTICS($T_a=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Off characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = -250\mu A$	-30			V
Zero gate voltage drain current	I_{DSS}	$V_{DS} = -30V, V_{GS} = 0V$			-1	μA
Gate-body leakage current	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 20V$			± 100	nA
On characteristics (note1)						
Gate-threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu A$	-1.0	-1.5	-2.5	V
Static drain-source on-state resistance	$R_{DS(on)}$	$V_{GS} = -10V, I_D = -10A$		4.4	7	m Ω
Forward transconductance	g_{fs}	$V_{DS} = -10V, I_D = -15A$		20		S
Dynamic characteristics (note 2)						
Input capacitance	C_{iss}	$V_{DS} = -15V, V_{GS} = 0V,$ $f = 1MHz$		3590		pF
Output capacitance	C_{oss}			695		
Reverse transfer capacitance	C_{rss}			665		
Switching characteristics (note 2)						
Total gate charge	Q_g	$V_{DS} = -15V, V_{GS} = -10V,$ $I_D = -10A$		84		nC
Gate-source charge	Q_{gs}			11.7		
Gate-drain charge	Q_{gd}			25		
Turn-on delay time	$t_{d(on)}$	$V_{DD} = -15V, I_D = -10A,$ $V_{GS} = -10V, R_G = 6\Omega$		13		ns
Turn-on rise time	t_r			12		
Turn-off delay time	$t_{d(off)}$			50		
Turn-off fall time	t_f			14		
Drain-Source Diode Characteristics						
Drain-source diode forward voltage(note1)	V_{SD}	$V_{GS} = 0V, I_S = -10A$		-0.85	-1.2	V
Continuous drain-source diode forward current(note3)	I_S				-50	A
Pulsed drain-source diode forward current	I_{SM}				-70	A

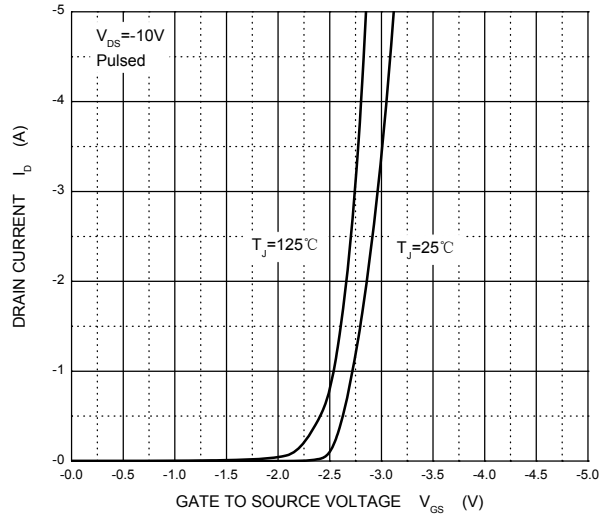
Notes:

1. Pulse Test : Pulse Width $\leq 300\mu s$, duty cycle $\leq 2\%$.
2. Guaranteed by design, not subject to production.
3. Surface Mounted on FR4 Board, $t \leq 10$ sec.

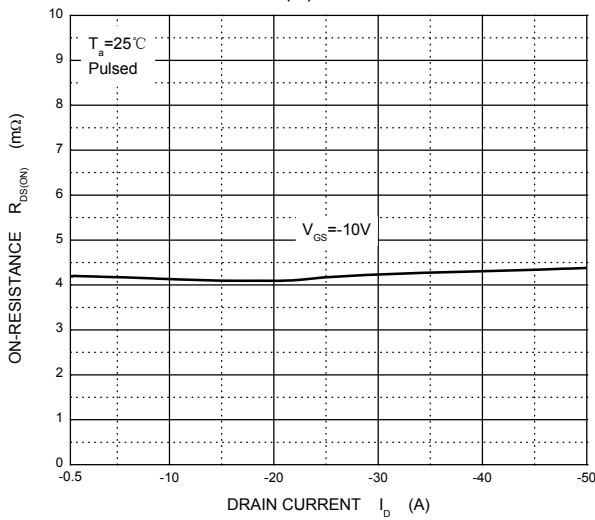
Output Characteristics



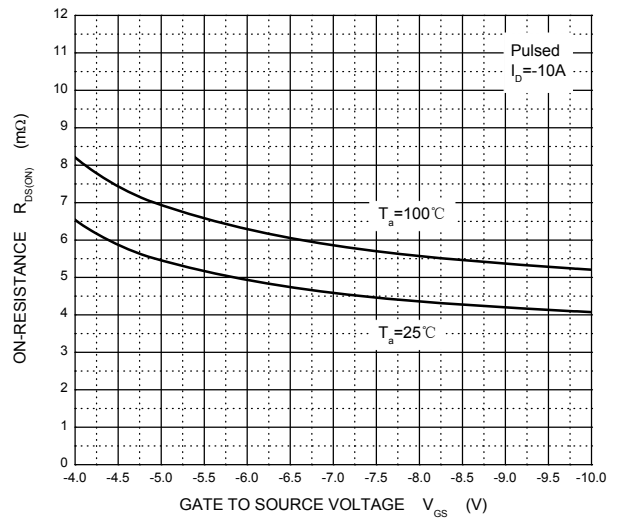
Transfer Characteristics



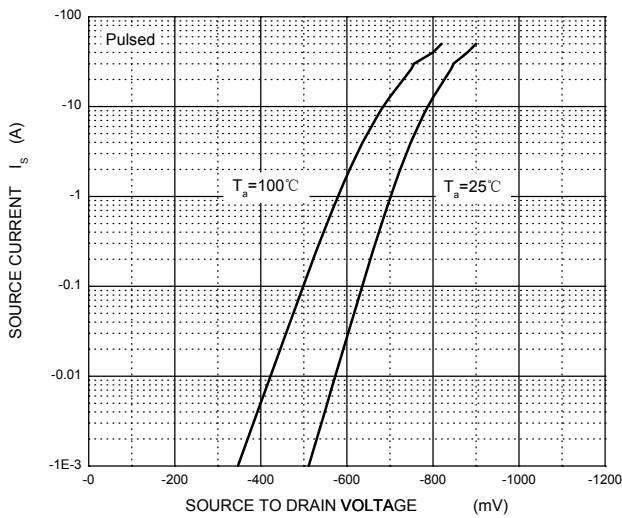
$R_{DS(ON)} - I_D$



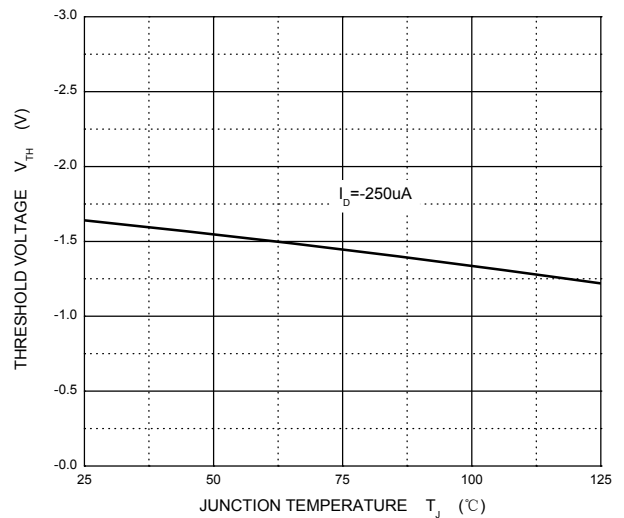
$R_{DS(ON)} - V_{GS}$



$I_S - V_{SD}$



Threshold Voltage





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Ordering Information :

Device	Packing
Part Number-TP	Tape&Reel:5Kpcs/Reel

Note : Adding "-HF" suffix for halogen free, eg. Part Number-TP-HF

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