

P-Channel 60V(D-S) MOSFET

Product summary		
V_{DS}	-60	V
$R_{DS(ON)}$ (at $V_{GS}=-10V$) Typ.	80	m Ω
$R_{DS(ON)}$ (at $V_{GS}=-4.5V$) Typ.	109	m Ω
I_D ($T_c=25^\circ C$)	-2.5	A

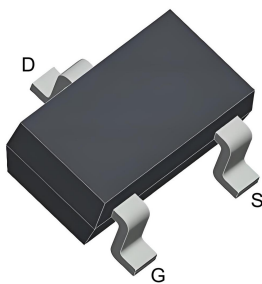
Features

- Advanced trench process technology
- High density cell design for ultra low on resistance

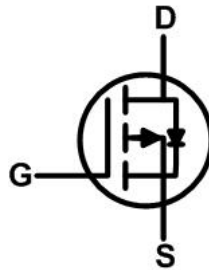
Applications

- Motor control
- Consumer electronic power supply

Pin Configuration



SOT-23



Packing Information

Device	Marking	Reel Size	Tape Width	Quantity
ECDA2203	B8P6	7"	8mm	3000pcs

Absolute Maximum Ratings (at $T_A=25^\circ C$ Unless Otherwise Noted)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-60	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Continuous Drain Current at $V_{GS}=-10V$	$T_A=25^\circ C$	-2.5
		$T_A=70^\circ C$	-2
I_{DM}	Pulse Drain Current Tested ^A	-10	A
P_D	Power Dissipation	$T_A=25^\circ C$	1.25
T_J, T_{STG}	Junction and Storage Temperature Range	-55 to +150	$^\circ C$

Thermal Characteristics

Symbol	Parameter	Typical	Units
$R_{\theta JA}$	Thermal Resistance-Junction to ambient ^B	100	$^\circ C/W$

Electrical Characteristics (at $T_J = 25^\circ\text{C}$ Unless Otherwise Noted)

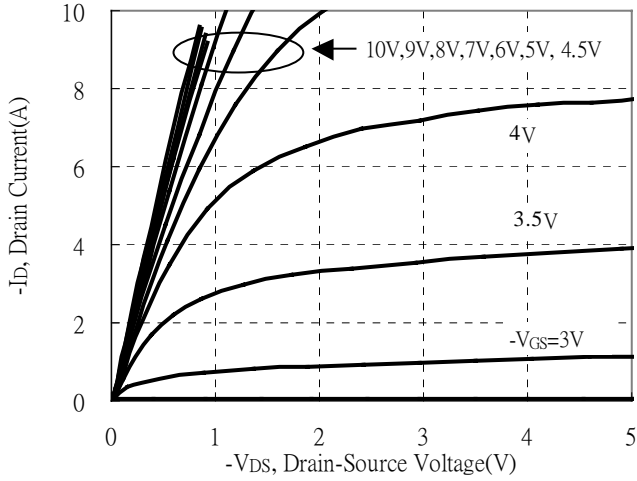
Symbol	Parameter	Condition	Min.	Typ.	Max.	Units
Static Parameters						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	-60	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=-48V, V_{GS}=0V$	--	--	-1	μA
I_{GSS}	Gate-Body Leakage Current	$V_{DS}=0V, V_{GS}=\pm 20V$	--	--	± 100	nA
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1.0	--	-2.5	V
$R_{DS(ON)}$	Drain-Source On-State Resistance	$V_{GS}=-10V, I_D=-2A$	--	80	104	m Ω
		$V_{GS}=-4.5V, I_D=-1.7A$	--	109	150	m Ω
V_{SD}	Forward Voltage	$I_{SD}=-2A, V_{GS}=0V$	--	--	-1.2	V
Dynamic Parameters						
C_{iss}	Input Capacitance	$V_{GS}=0V, V_{DS}=-25V$ $f=1\text{MHz}$	--	511	--	pF
C_{oss}	Output Capacitance		--	57	--	pF
C_{rss}	Reverse Transfer Capacitance		--	40	--	pF
Switching Parameters						
Q_g	Total Gate Charge	$V_{DS}=-48V, I_D=-2A$ $V_{GS}=-10V$	--	12	--	nC
Q_{gs}	Gate-Source Charge		--	1.7	--	nC
Q_{gd}	Gate-Drain Charge		--	3	--	nC
$t_{D(on)}$	Turn-on Delay Time	$V_{DD}=-30V$ $I_D=-2A, R_{GEN}=3\Omega,$ $V_{GS}=-10V$	--	6.8	--	nS
t_r	Turn-on Rise Time		--	18.2	--	nS
$t_{D(off)}$	Turn-off Delay Time		--	26.4	--	nS
t_f	Turn-off Fall Time		--	7.6	--	nS
t_{rr}	Reverse recovery time	$I_F=-2A,$ $di/dt=100\text{ A/uS}$	--	10.7	--	nS
Q_{rr}	Reverse recovery charge		--	6.4	--	nC

 A. Pulse Test: Pulse Width $\leq 300\mu s$, Duty cycle $\leq 2\%$.

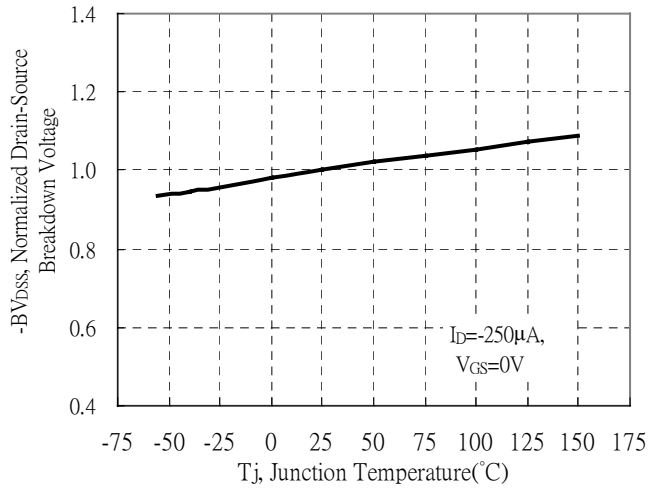
B. Device mounted on FR-4 PCB, 1 inch x 1 inch x 0.062 inch.

Typical Characteristics

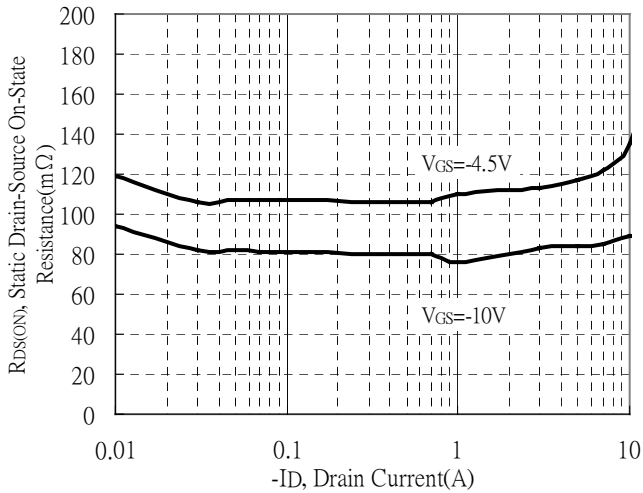
Typical Output Characteristics



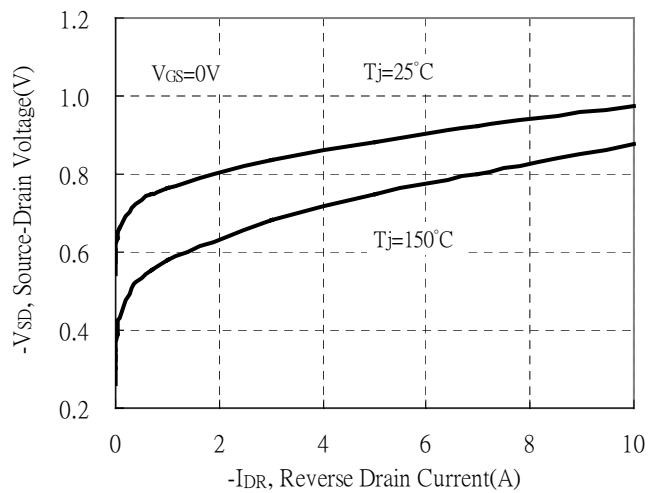
Breakdown Voltage vs Ambient Temperature



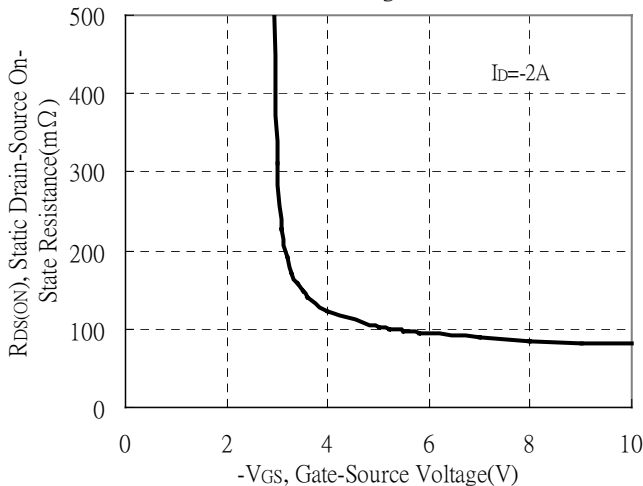
Static Drain-Source On-State resistance vs Drain Current



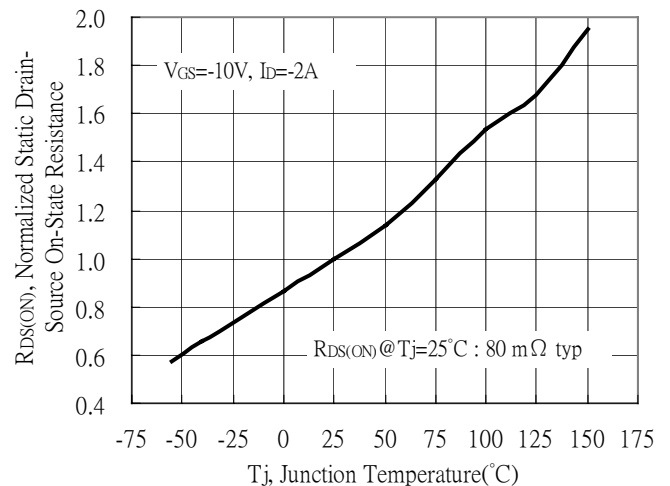
Reverse Drain Current vs Source-Drain Voltage



Static Drain-Source On-State Resistance vs Gate-Source Voltage

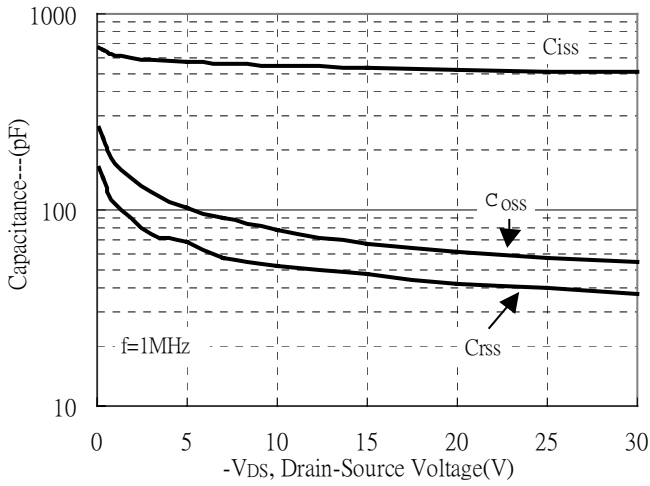


Drain-Source On-State Resistance vs Junction Temperature

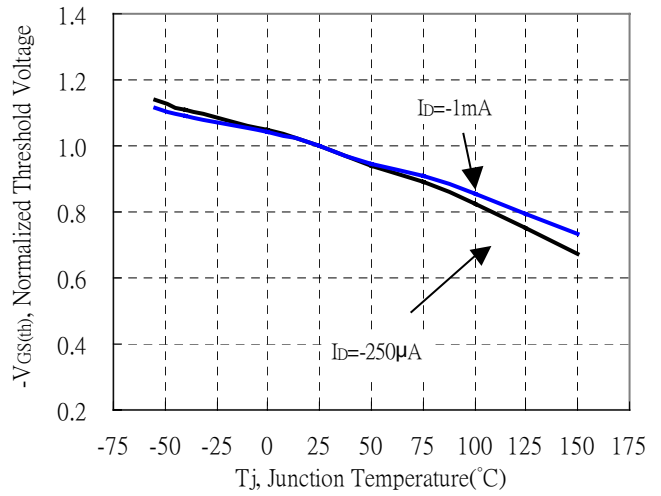


Typical Characteristics

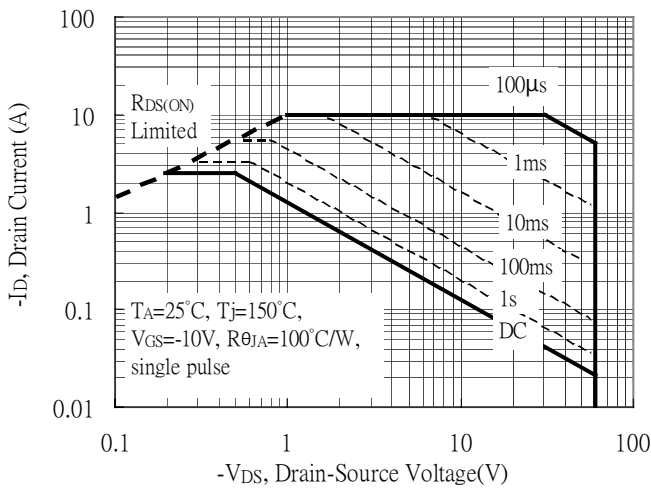
Capacitance vs Drain-to-Source Voltage



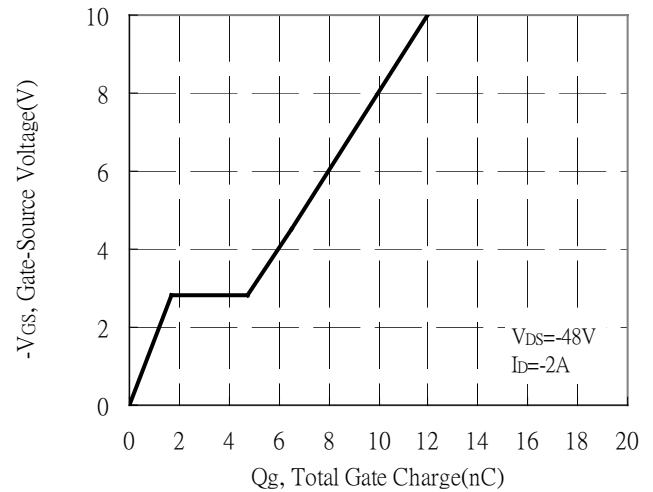
Threshold Voltage vs Junction Temperature



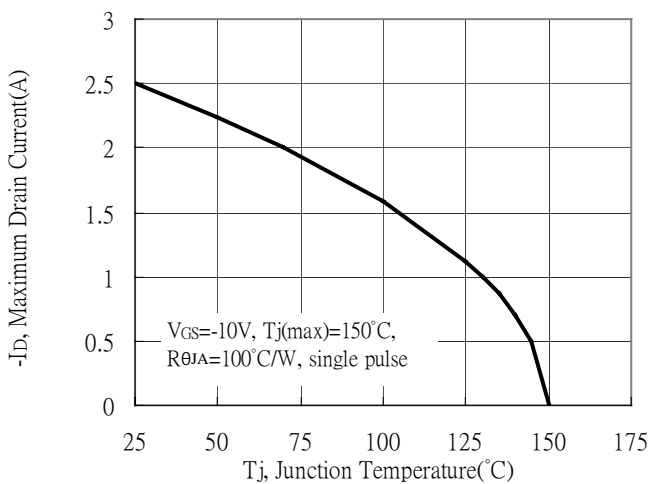
Maximum Safe Operating Area



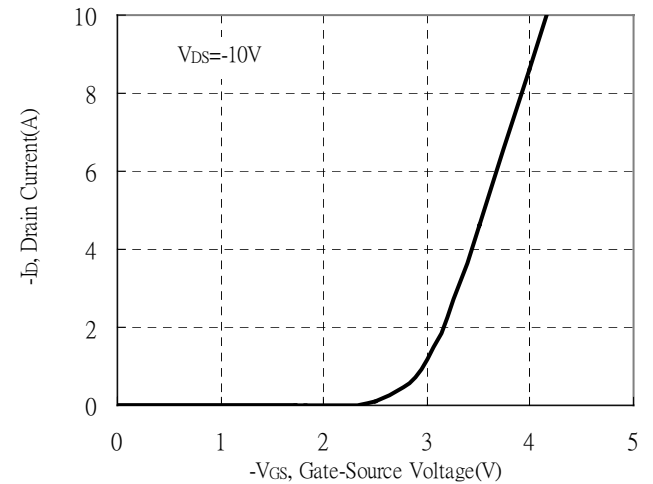
Gate Charge Characteristics



Maximum Drain Current vs Junction Temperature

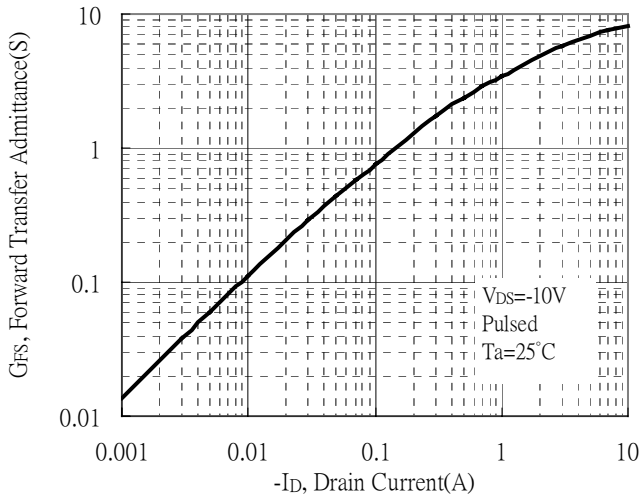


Typical Transfer Characteristics

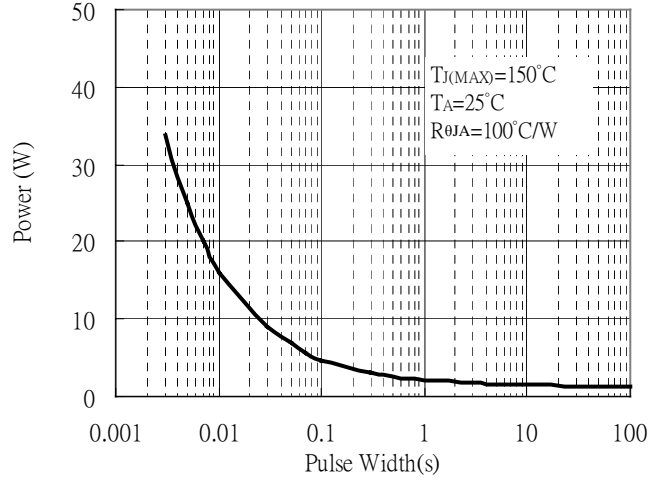


Typical Characteristics

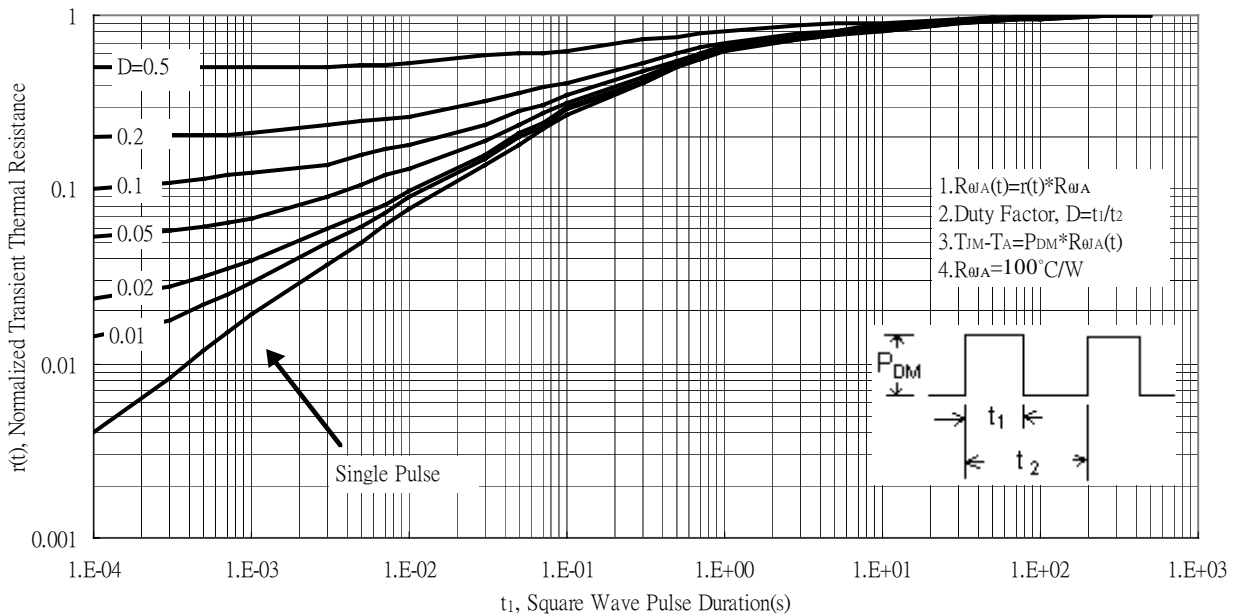
Forward Transfer Admittance vs Drain Current



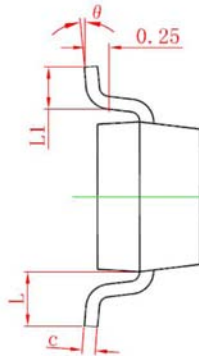
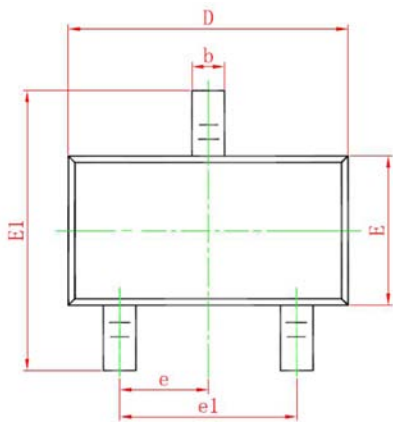
Single Pulse Power Rating, Junction to Ambient
(Note on page 2)



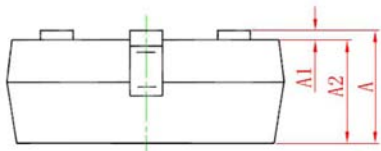
Transient Thermal Response Curves



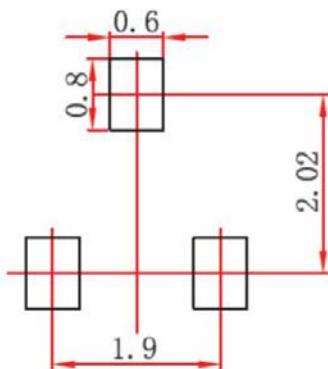
SOT-23 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP.		0.037 TYP.	
e1	1.800	2.000	0.071	0.079
L	0.550 REF.		0.022 REF.	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°



Recommended Pad outline



- Note:
1. Controlling dimension: in millimeters.
 2. General tolerance: $\pm 0.05\text{mm}$.
 3. The pad layout is for reference purposes only.