AD60P04S

P-Channel Enhancement Mode Power MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
-40V	11.5mΩ@-10V	-60A
	18mΩ@-4.5V	

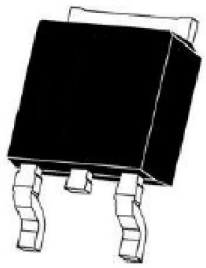
Feature

- High density cell design for ultra low Rdson
- Fully characterized avalanche voltage and current
- Good stability and uniformity with high EAS
- Excellent package for good heat dissipation

Application

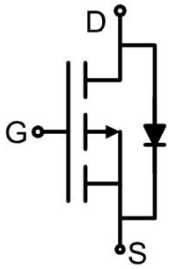
- Power switch
- Load switch in high current applications
- DC/DC converters

Package



TO-252AB

Circuit diagram



Marking

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Absolute maximum ratings (Ta=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-40	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	-60	A
Pulsed Drain Current	I_{DM}	-240	A
Power Dissipation (T_C=25℃)	P_D	100	W
Single pulse avalanche energy [1]	E_{AS}	800	mJ
Thermal Resistance,Junction-to-Case[2]	$R_{\theta JC}$	1.25	℃/W
Junction Temperature	T_J	150	℃
Storage Temperature	T_{STG}	-55 ~ +150	℃

Electrical characteristics (T_A=25 ℃ unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS}= 0V, I_D =-250μA	-40			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =-40V,V_{GS} = 0V			-1	μA
Gate-body leakage current	I_{GSS}	V_{GS} =±20V, V_{DS} = 0V			±100	nA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =-250μA	-1.2	-1.6	-2.5	V
Drain-source on-resistance	$R_{DS(on)}$	V_{GS} =-10V, I_D =-10A		8.9	11.5	mΩ
		V_{DS} =-4.5V, I_D =-8A		13	18	
Dynamic characteristics[3]						
Input Capacitance	C_{iss}	V_{DS} =-20V,V_{GS} =0V,f =1MHz		4004		pF
Output Capacitance	C_{oss}			309		
Reverse Transfer Capacitance	C_{rss}			229		
Total Gate Charge	Q_g	V_{DS} =-20V,V_{GS} =-10V, I_D =-20A		67		nC
Gate-Source Charge	Q_{gs}			13.2		
Gate-Drain Charge	Q_{gd}			11		
Turn-on delay time	$t_{d(on)}$	V_{DD}=-20V,I_D=-10A, V_{GS} =-10V,R_G=3Ω		9.9		nS
Turn-on rise time	t_r			3.2		
Turn-off delay time	$t_{d(off)}$			46		
Turn-off fall time	t_f			53		
Source-Drain Diode characteristics						
Diode Forward voltage	V_{SD}	V_{GS} =0V, I_S=-60A			-1.2	V

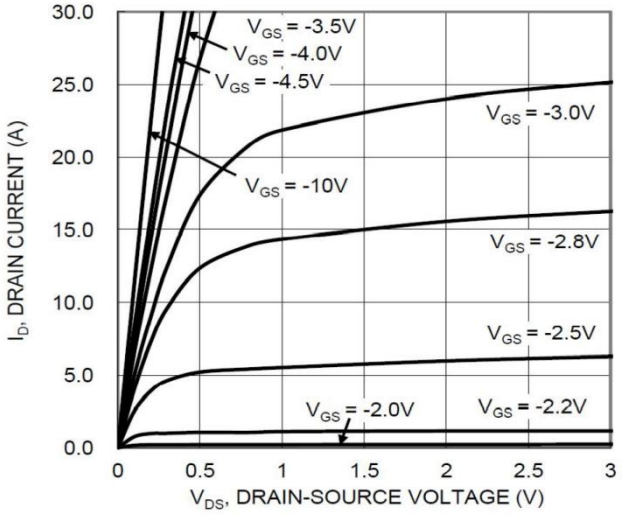
Notes:

1) EAS condition: T_j=25℃,V_{DD}=-20V,V_G=-10V,L=1mH,R_g=25Ω.

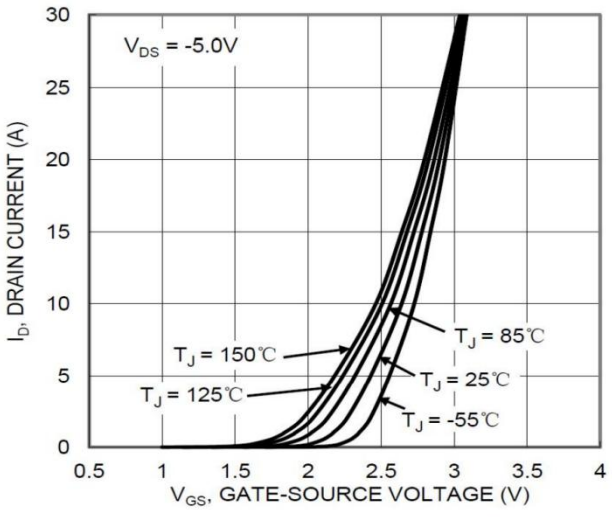
2) Surface Mounted on FR4 Board, t ≤ 10 sec.

3) Guaranteed by design, not subject to production testing.

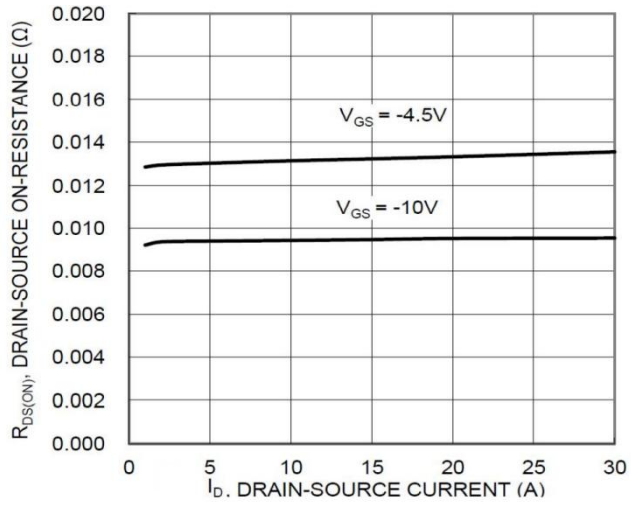
Typical Characteristics



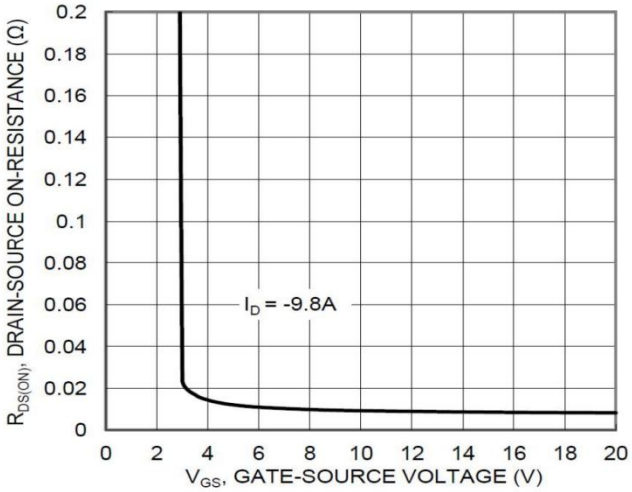
Typical Output Characteristic



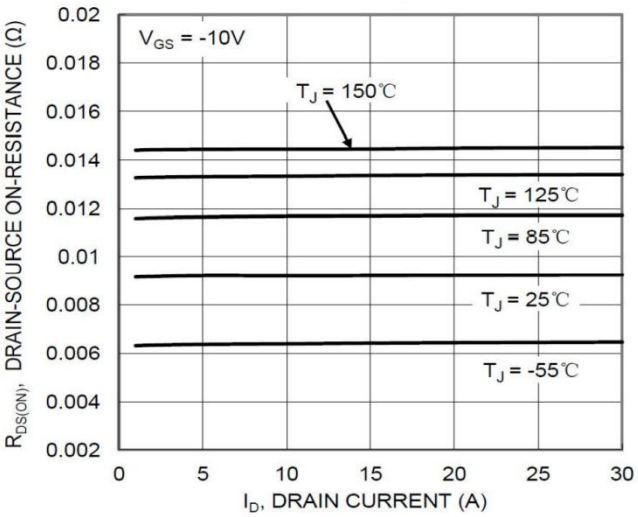
Typical Transfer Characteristic



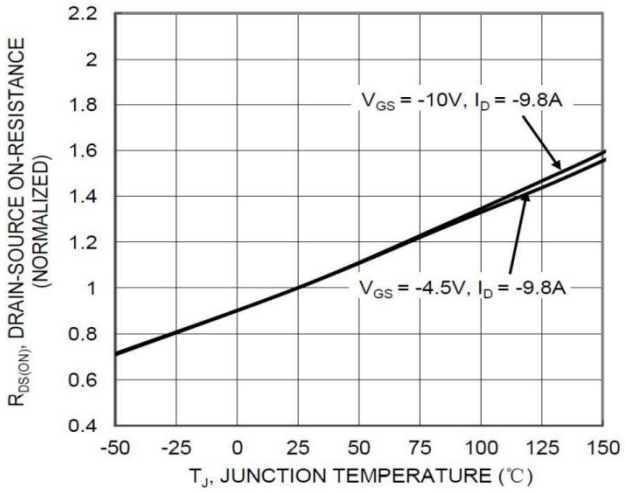
Typical On-Resistance vs. Drain Current and Gate Voltage



Typical Transfer Characteristic

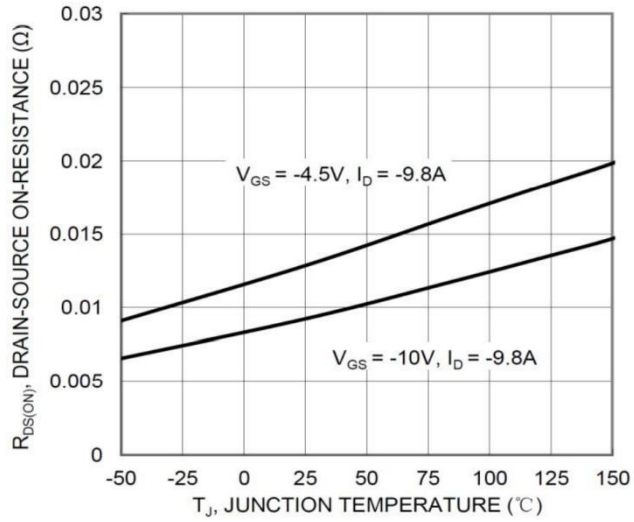


Typical On-Resistance vs. Drain Current and Temperature

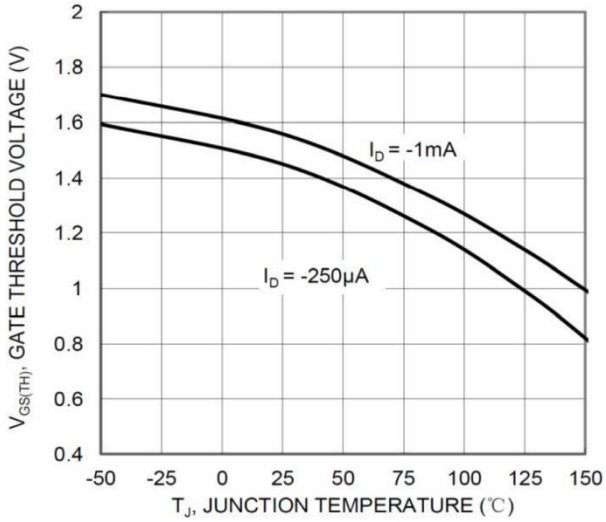


On-Resistance Variation with Temperature

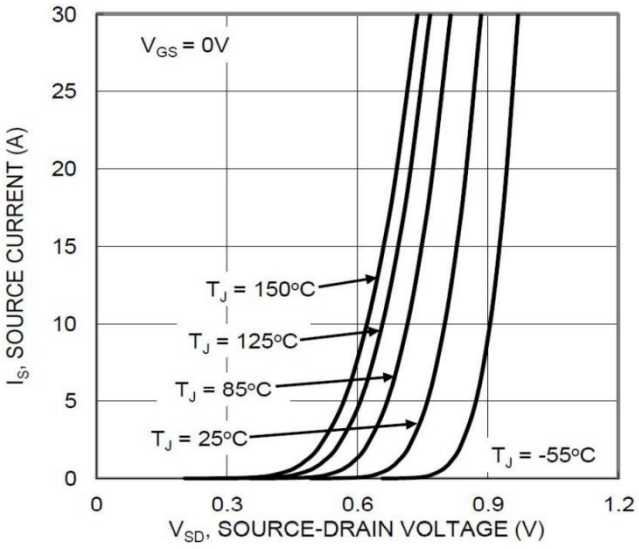
Typical Characteristic



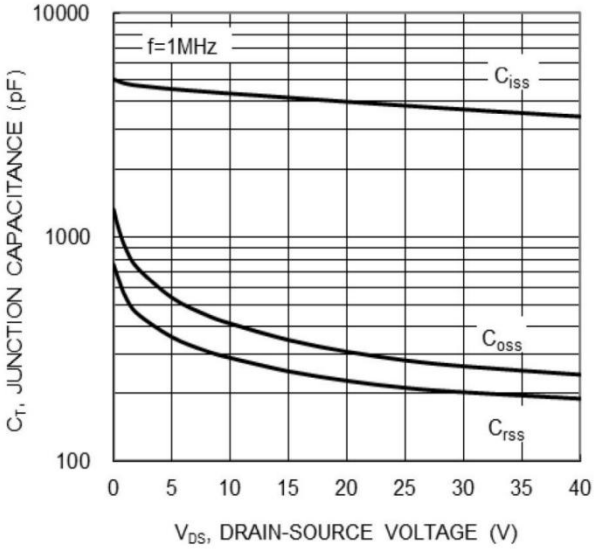
On-Resistance Variation withTemperature



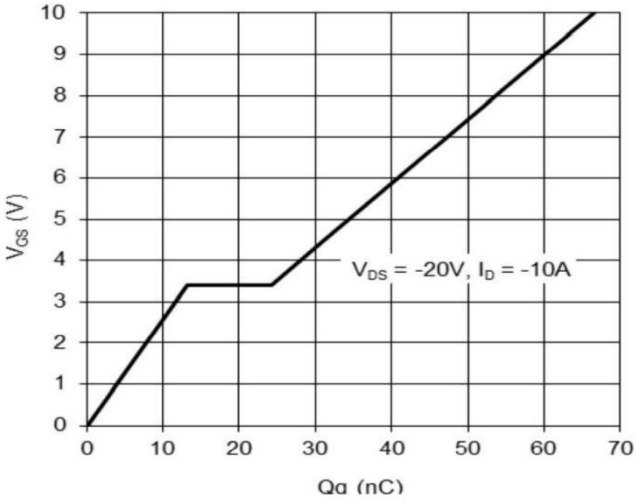
Gate Threshold Variation vs. Junction Temperature



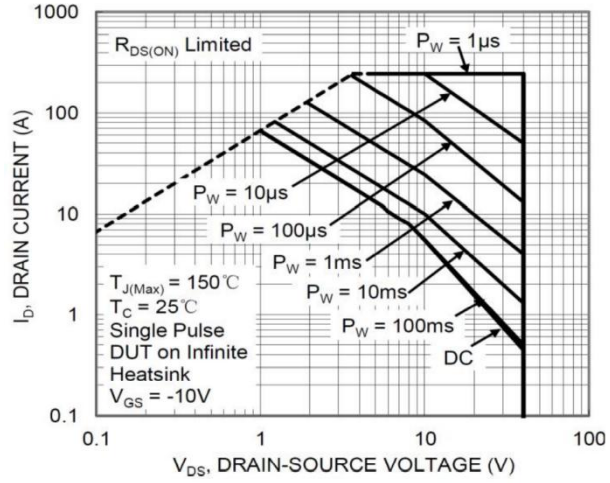
Diode Forward Voltage vs. Current



Typical Junction capacitance

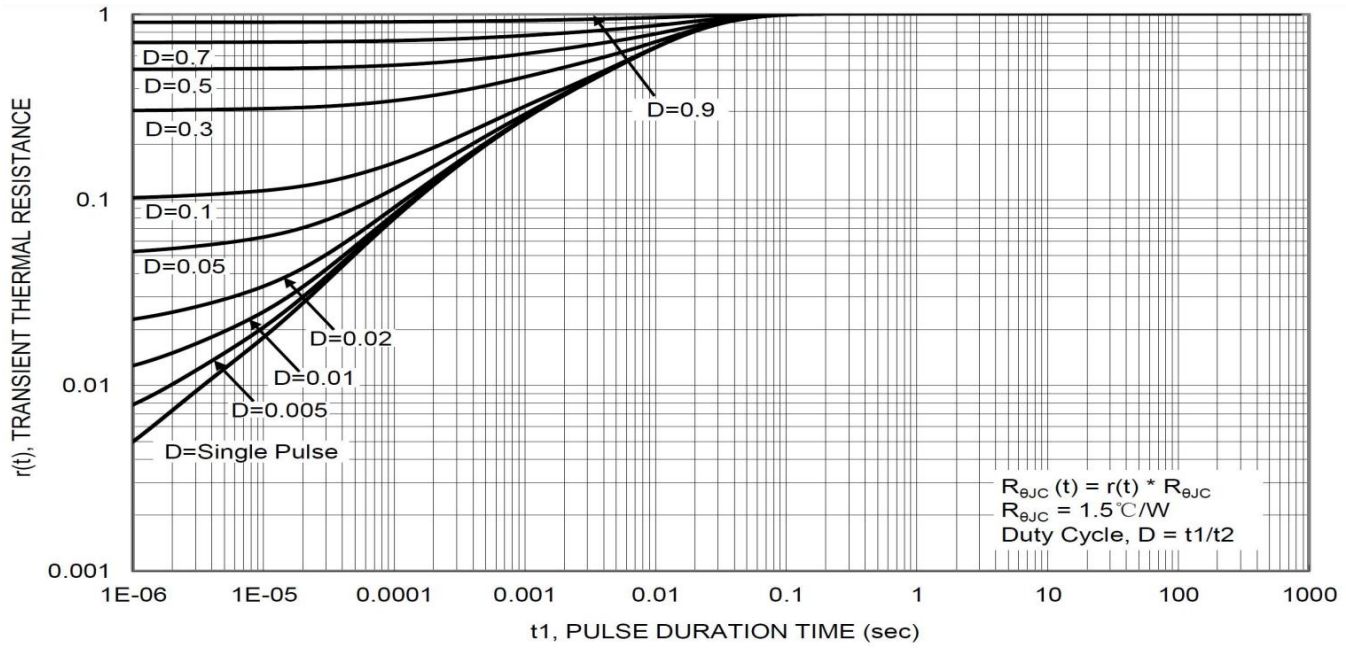


Gate Charge



Safe Operation Area

Typical Characteristic



Transient Thermal Resistance

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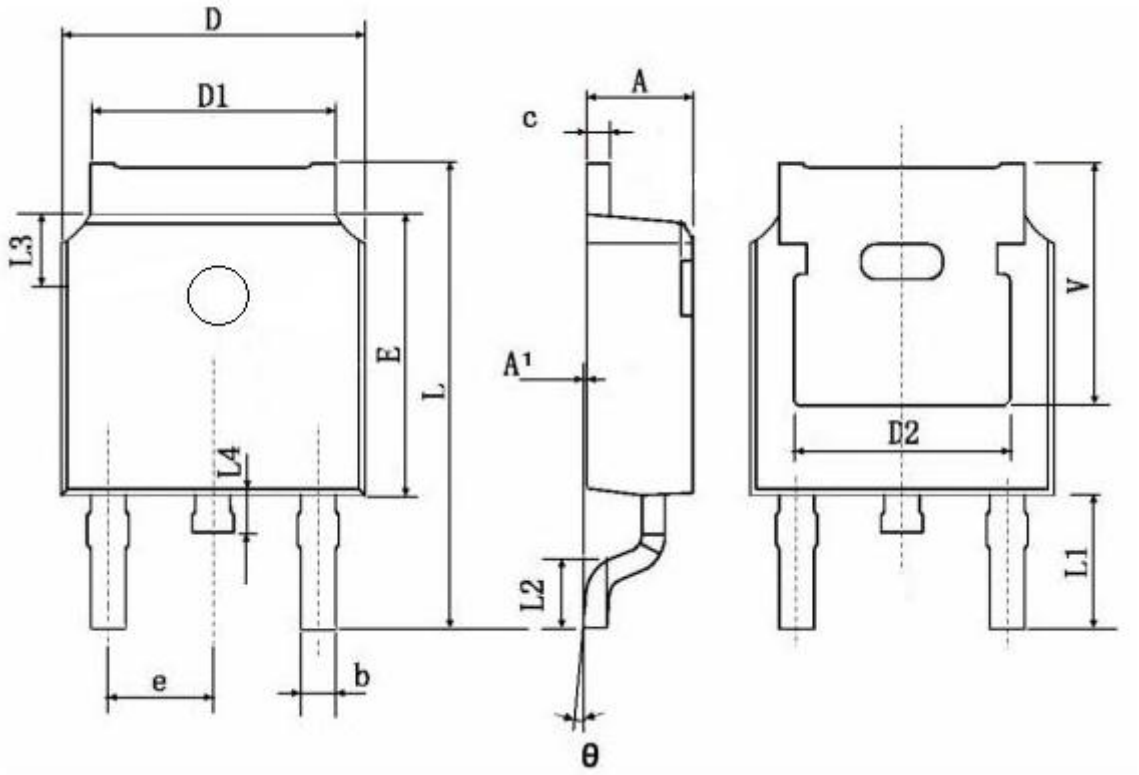

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	0.000	0.200	0.000	0.008
b	0.660	0.860	0.026	0.034
c	0.460	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264
D1	5.100	5.500	0.201	0.217
D2	4.830 REF.		0.190 REF.	
E	6.000	6.200	0.236	0.244
e	2.186	2.386	0.086	0.094
L	9.800	10.500	0.386	0.413
L1	2.900 REF.		0.114 REF.	
L2	1.250	1.750	0.049	0.069
L3	1.600 REF.		0.063 REF.	
L4	0.600	1.000	0.023	0.039
V	5.350 REF.		0.211 REF.	
θ	0°	8°	0°	8°