EVVOSEMI®

THINK CHANGE DO

ESD TVS MOS LDO Diode Sensor DC-DC

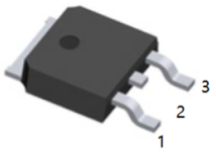
Product Specification

Domestic Part Number	SUD50P06-15
Overseas Part Number	SUD50P06-15
Equivalent Part Number	SUD50P06-15

-60V P-Channel MOSFET

PRODUCT SUMMARY

- V_{DS} (V) = -60V
- $R_{DS(ON)}$ < 15mΩ (V_{GS} = -10V)
- $R_{DS(ON)}$ < 20mΩ (V_{GS} = -4.5V)

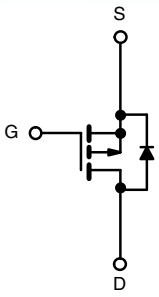


1.G 2.D 3.S

TO-252(DPAK) top view

APPLICATIONS

- Load Switch



ABSOLUTE MAXIMUM RATINGS(T_A= 25 °C, unless otherwise noted)

Parameter		Symbol	Limit	Unit
Drain-Source Voltage		V_{DS}	- 60	V
Gate-Source Voltage		V_{GS}	± 20	
Continuous Drain Current (T_J = 175 °C)	T_C = 25 °C	I_D	- 50[d]	A
	T_C = 125 °C		- 27.5	
Pulsed Drain Current		I_{DM}	- 80	
Avalanche Current		I_{AS}	- 50	
Single Pulse Avalanche Energy[a]	L = 0.1 mH	E_{AS}	125	mJ
Power Dissipation	T_C = 25 °C	P_D	113[c]	W
	T_A = 25 °C		2.5[b, c]	
Operating Junction and Storage Temperature Range		T_J, T_{stg}	- 55 to 150	°C

THERMAL RESISTANCE RATINGS

Parameter		Symbol	Typical	Maximum	Unit
Junction-to-Ambient[b]	t ≤ 10 s	R_{thJA}	15	18	°C/W
	Steady State		40	50	
Junction-to-Case		R_{thJC}	0.82	1.1	

Notes:
a. Duty cycle ≤ 1 %.
b. When mounted on 1" square PCB (FR-4 material).
c. See SOA curve for voltage derating.
d. Package limited.

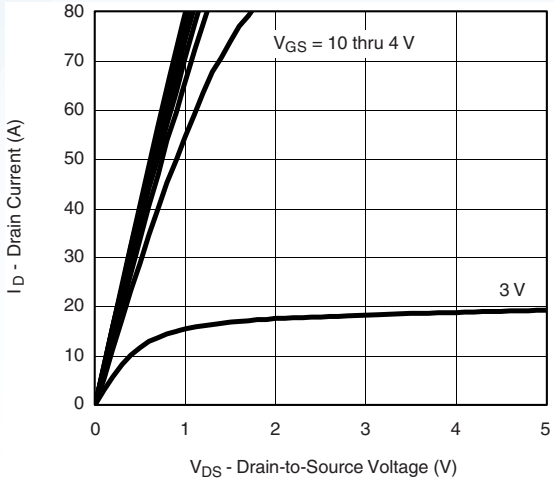
-60V P-Channel MOSFET

SPECIFICATIONS (T_J = 25 °C, unless otherwise noted)

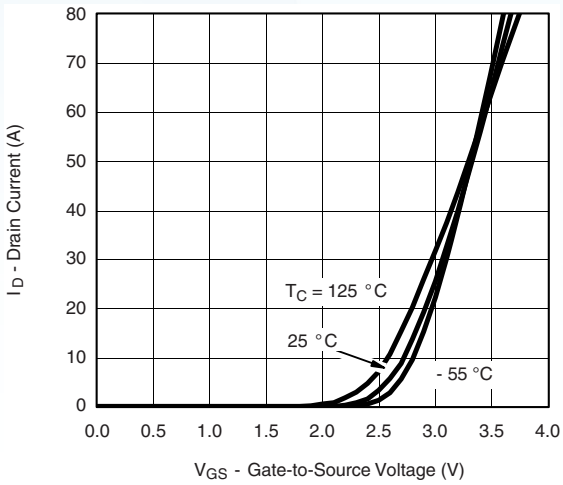
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Static						
Drain-Source Breakdown Voltage	V_{DS}	V_{GS} = 0 V, I_D = - 250 µA	- 60			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = - 250 µA	-1.1	-1.8	-2.5	
Gate-Body Leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = ± 20 V			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = - 60 V, V_{GS} = 0 V			- 1	µA
		V_{DS} = - 60 V, V_{GS} = 0 V, T_J = 125 °C			- 50	
		V_{DS} = - 60 V, V_{GS} = 0 V, T_J = 150 °C			- 100	
On-State Drain Current[a]	$I_{D(on)}$	V_{DS} = - 5 V, V_{GS} = - 10 V	- 50			A
Drain-Source On-State Resistance[a]	$R_{DS(on)}$	V_{GS} = - 10 V, I_D = - 17 A		12	15	mΩ
		V_{GS} = - 10 V, I_D = - 50 A, T_J = 125 °C			25	
		V_{GS} = - 10 V, I_D = - 50 A, T_J = 150 °C			28	
		V_{GS} = - 4.5 V, I_D = - 14 A			20	
Forward Transconductance[a]	g_{fs}	V_{DS} = - 15 V, I_D = - 17 A		61		S
Dynamic[b]						
Input Capacitance	C_{iss}	V_{GS} = 0 V, V_{DS} = - 25 V, f = 1 MHz		4950		pF
Output Capacitance	C_{oss}			480		
Reverse Transfer Capacitance	C_{rss}			405		
Total Gate Charge[c]	Q_g	V_{DS} = - 30 V, V_{GS} = - 10 V, I_D = - 50 A		110	165	nC
Gate-Source Charge[c]	Q_{gs}			19		
Gate-Drain Charge[c]	Q_{gd}			28		
Turn-On Delay Time[c]	$t_{d(on)}$	V_{DD} = - 30 V, R_L = 0.6 Ω I_D ≅ - 50 A, V_{GEN} = - 10 V, R_G = 6 Ω		15	23	ns
Rise Time[c]	t_r			70	105	
Turn-Off Delay Time[c]	$t_{d(off)}$			175	260	
Fall Time[c]	t_f			175	260	
Source-Drain Diode Ratings and Characteristics T_C = 25 °C[b]						
Continuous Current	I_S				- 50	A
Pulsed Current	I_{SM}				- 80	
Forward Voltage[a]	V_{SD}	I_F = - 50 A, V_{GS} = 0 V		- 1	- 1.6	V
Reverse Recovery Time	t_{rr}	I_F = - 50 A, dI/dt = 100 A/µs		45	70	ns

Notes:
a. Pulse test; pulse width ≤ 300 µs, duty cycle ≤ 2 %.
b. Guaranteed by design, not subject to production testing.
c. Independent of operating temperature.

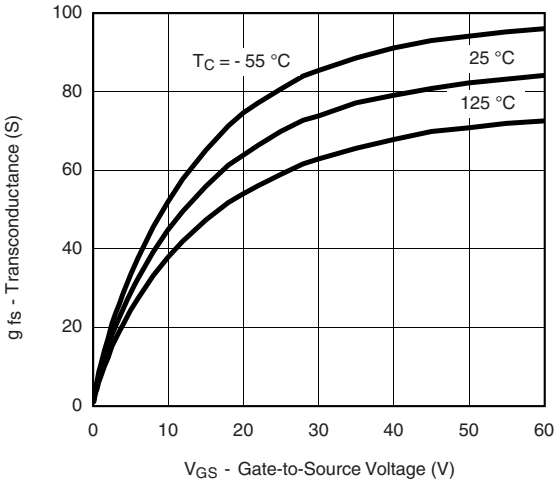
-60V P-Channel MOSFET



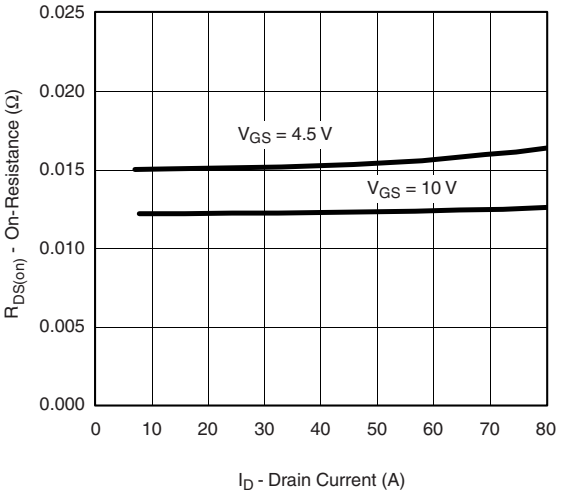
Output Characteristics



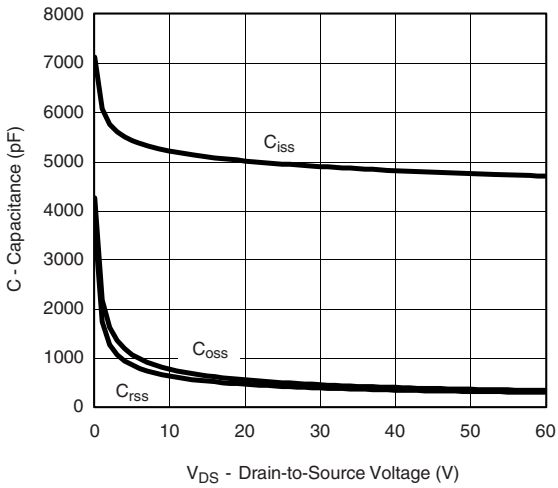
Transfer Characteristics

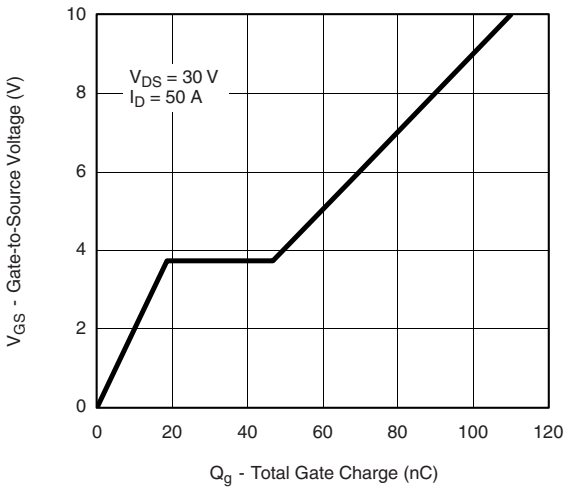


Transconductance



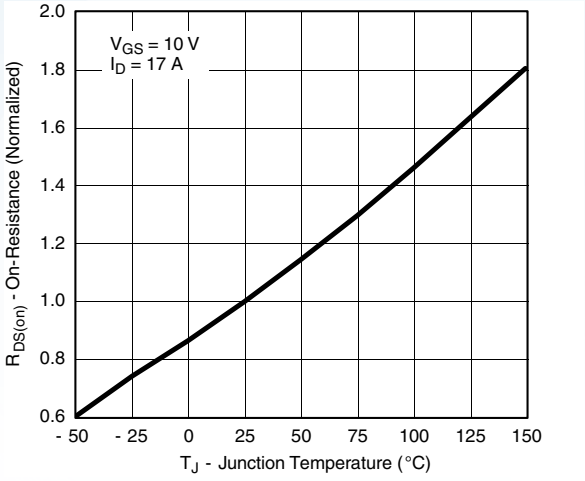
On-Resistance vs. Drain Current



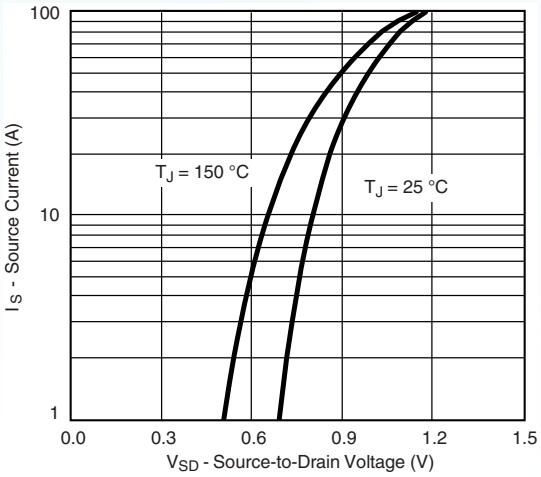


-60V P-Channel MOSFET

TYPICAL CHARACTERISTICS

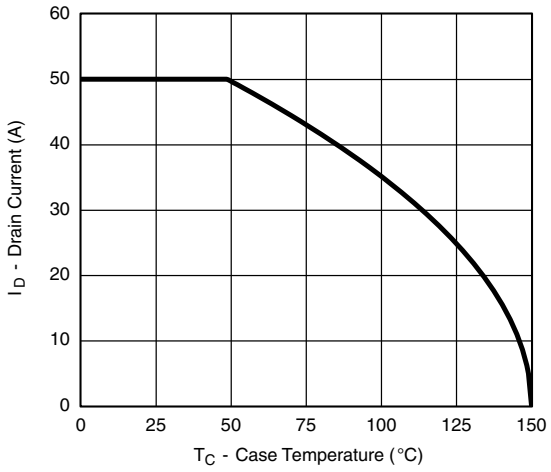


On-Resistance vs. Junction Temperature

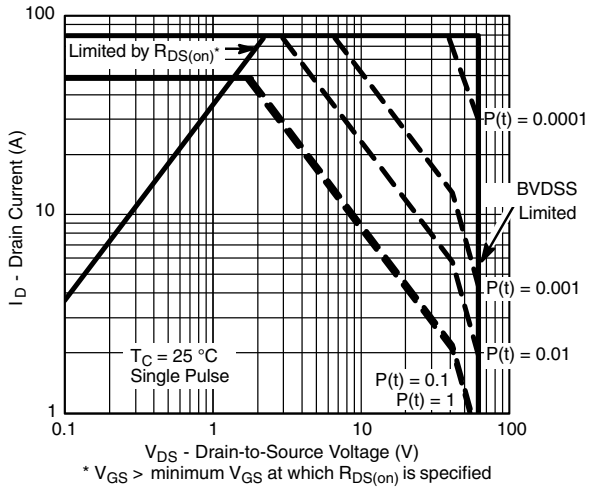


Source-Drain Diode Forward Voltage

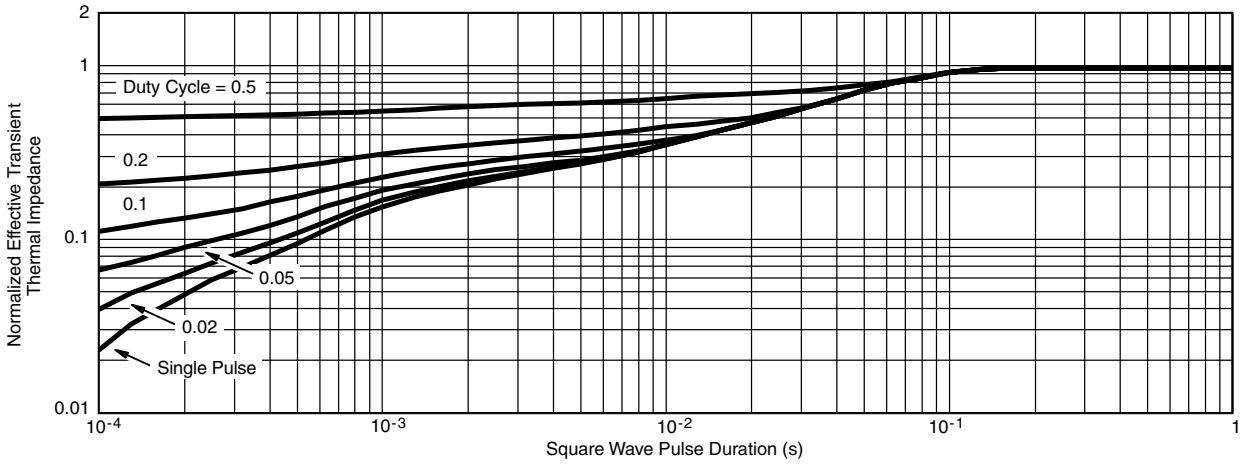
THERMAL RATINGS (25 °C, unless otherwise noted)



Drain Current vs. Case Temperature



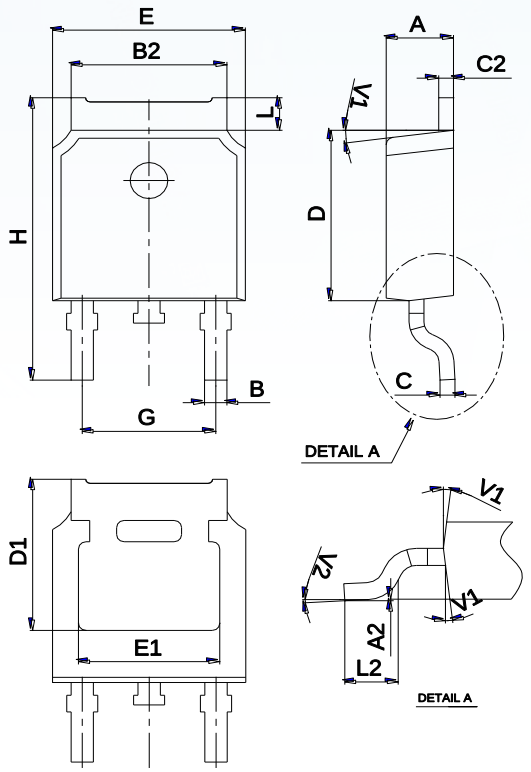
Safe Operating Area



Normalized Thermal Transient Impedance, Junction-to-Case

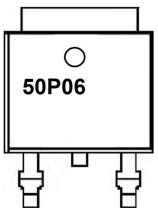
-60V P-Channel MOSFET

Package Mechanical Data TO-252



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.10		2.50	0.083		0.098
A2	0		0.10	0		0.004
B	0.66		0.86	0.026		0.034
B2	5.18		5.48	0.202		0.216
C	0.40		0.60	0.016		0.024
C2	0.44		0.58	0.017		0.023
D	5.90		6.30	0.232		0.248
D1	5.30REF			0.209REF		
E	6.40		6.80	0.252		0.268
E1	4.63			0.182		
G	4.47		4.67	0.176		0.184
H	9.50		10.70	0.374		0.421
L	1.09		1.21	0.043		0.048
L2	1.35		1.65	0.053		0.065
V1		7°			7°	
V2	0°		6°	0°		6°

Marking



Ordering information

Order code	Package	Baseqty	Deliverymode
SUD50P06-15	TO-252	2500	Tape and reel

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