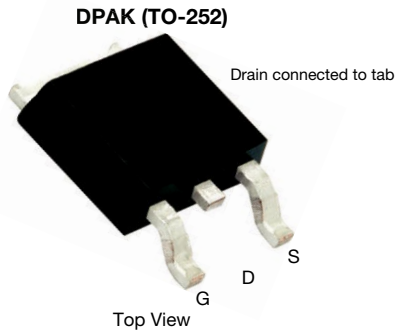


## P-Channel 60 V (D-S) MOSFET

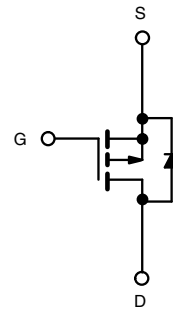


### FEATURES

- TrenchFET® power MOSFETs
- Material categorization:  
for definitions of compliance please  
see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



**RoHS**  
COMPLIANT  
HALOGEN  
**FREE**



P-Channel MOSFET

### PRODUCT SUMMARY

$V_{DS}$ (V)	-60
$R_{DS(on)}$ max. ( $\Omega$ ) at $V_{GS} = -10$ V	0.155
$R_{DS(on)}$ max. ( $\Omega$ ) at $V_{GS} = -4.5$ V	0.280
$Q_g$ typ. (nC)	12.5
$I_D$ (A)	-8.4
Configuration	Single

### ORDERING INFORMATION

Package	DPAK (TO-252)
Lead (Pb)-free and halogen-free	SUD08P06-155L-GE3

### ABSOLUTE MAXIMUM RATINGS ( $T_C = 25^\circ\text{C}$ , unless otherwise noted)

PARAMETER	SYMBOL	LIMIT	UNIT
Gate-source voltage	$V_{GS}$	$\pm 20$	V
Continuous drain current ( $T_J = 150^\circ\text{C}$ )	$I_D$	$T_C = 25^\circ\text{C}$ -8.2	A
		$T_C = 100^\circ\text{C}$ -5.2	
Pulsed drain current	$I_{DM}$	-18	
Continuing source current (diode conduction)	$I_S$	-8.4	
Avalanche current	$I_{AS}$	-12	
Single pulse avalanche energy	$E_{AS}$	7.2	mJ
Maximum power dissipation	$P_D$	$T_C = 25^\circ\text{C}$ 20.8 <sup>a</sup>	W
		$T_A = 25^\circ\text{C}$ 1.7 <sup>b</sup>	
Operating junction and storage temperature range	$T_J, T_{stg}$	-55 to +150	$^\circ\text{C}$

### THERMAL RESISTANCE RATINGS

PARAMETER	SYMBOL	TYPICAL	MAXIMUM	UNIT
Junction-to-ambient <sup>b</sup>	$R_{thJA}$	$t \leq 10$ s 20	25	$^\circ\text{C/W}$
		Steady state 62	75	
Junction-to-case	$R_{thJC}$	5	6	

#### Notes

- a. See SOA curve for voltage derating  
b. Surface mounted on 1" x 1" FR-4 board



SPECIFICATIONS (T <sub>J</sub> = 25 °C, unless otherwise noted)						
PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP. <sup>a</sup>	MAX.	UNIT
Static						
Drain-source breakdown voltage	V <sub>DS</sub>	V <sub>GS</sub> = 0 V, I <sub>D</sub> = -250 μA	-60	-	-	V
Gate threshold voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = -250 μA	-1	-2	-	
Gate-body leakage	I <sub>GSS</sub>	V <sub>DS</sub> = 0 V, V <sub>GS</sub> = ± 20 V	-	-	± 100	nA
Zero gate voltage drain current	I <sub>DSS</sub>	V <sub>DS</sub> = -60 V, V <sub>GS</sub> = 0 V	-	-	-1	μA
		V <sub>DS</sub> = -60 V, V <sub>GS</sub> = 0 V, T <sub>J</sub> = 125 °C	-	-	-50	
		V <sub>DS</sub> = -60 V, V <sub>GS</sub> = 0 V, T <sub>J</sub> = 150 °C	-	-	-150	
On-state drain current <sup>b</sup>	I <sub>D(on)</sub>	V <sub>DS</sub> = -5 V, V <sub>GS</sub> = -10 V	-10	-	-	A
Drain-source on-state resistance <sup>b</sup>	R <sub>DS(on)</sub>	V <sub>GS</sub> = -10 V, I <sub>D</sub> = -5 A	-	0.125	0.155	Ω
		V <sub>GS</sub> = -10 V, I <sub>D</sub> = -5 A, T <sub>J</sub> = 125 °C	-	-	0.280	
		V <sub>GS</sub> = -10 V, I <sub>D</sub> = -5 A, T <sub>J</sub> = 150 °C	-	-	0.350	
		V <sub>GS</sub> = -4.5 V, I <sub>D</sub> = -2 A	-	0.158	0.280	
Forward transconductance <sup>b</sup>	g <sub>fs</sub>	V <sub>DS</sub> = -15 V, I <sub>D</sub> = -5 A	-	8	-	S
Dynamic						
Input capacitance	C <sub>iss</sub>	V <sub>DS</sub> = -25 V, V <sub>GS</sub> = 0 V, f = 1 MHz	-	450	-	pF
Output capacitance	C <sub>oss</sub>		-	65	-	
Reverse transfer capacitance	C <sub>rss</sub>		-	40	-	
Total gate charge	Q <sub>g</sub>	V <sub>DS</sub> = -30 V, V <sub>GS</sub> = -10 V, I <sub>D</sub> = -8.4 A	-	12.5	19	nC
Gate-source charge	Q <sub>gs</sub>		-	2.3	-	
Gate-drain charge	Q <sub>gd</sub>		-	3.2	-	
Gate resistance	R <sub>g</sub>	f = 1 MHz	-	8	-	Ω
Turn-on delay time <sup>c</sup>	t <sub>d(on)</sub>	V <sub>DD</sub> = -30 V, R <sub>L</sub> = 3.57 Ω I <sub>D</sub> ≅ -8.4 A, V <sub>GEN</sub> = -10 V, R <sub>g</sub> = 2.5 Ω	-	5	10	ns
Rise time <sup>c</sup>	t <sub>r</sub>		-	14	25	
Turn-off delay time <sup>c</sup>	t <sub>d(off)</sub>		-	15	25	
Fall time <sup>c</sup>	t <sub>f</sub>		-	7	12	
Source-Drain Diode Ratings and Characteristics (T <sub>C</sub> = 25 °C) <sup>b</sup>						
Pulsed current	I <sub>SM</sub>		-	-	-20	A
Forward voltage <sup>b</sup>	V <sub>SD</sub>	I <sub>F</sub> = -2 A, V <sub>GS</sub> = 0 V	-	-0.9	-1.3	V
Reverse recovery time	t <sub>rr</sub>	I <sub>F</sub> = -8 A, di/dt = 100 A/μs	-	50	80	ns
Reverse recovery time	Q <sub>rr</sub>		-	80	120	nC

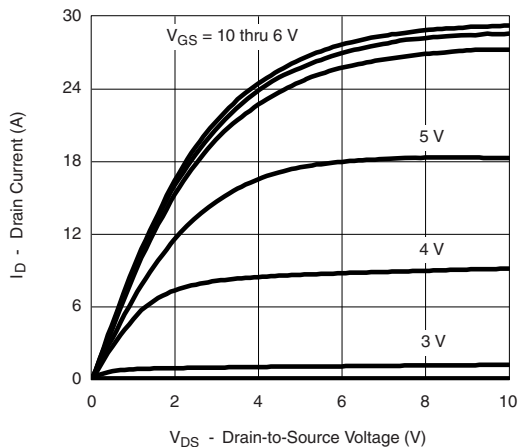
**Notes**

- a. Guaranteed by design, not subject to production testing  
b. Pulse test; pulse width  $\leq 300\text{ }\mu\text{s}$ , duty cycle  $\leq 2\%$   
c. Independent of operating temperature

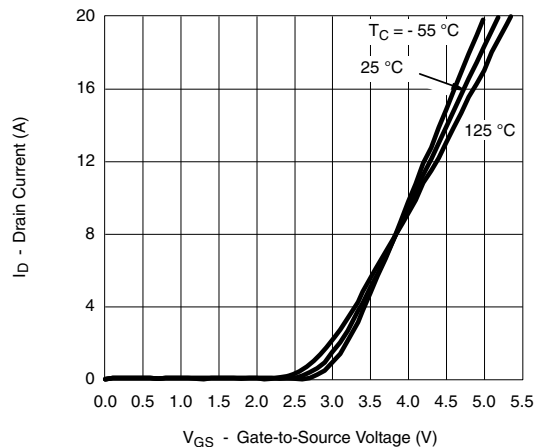
Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.



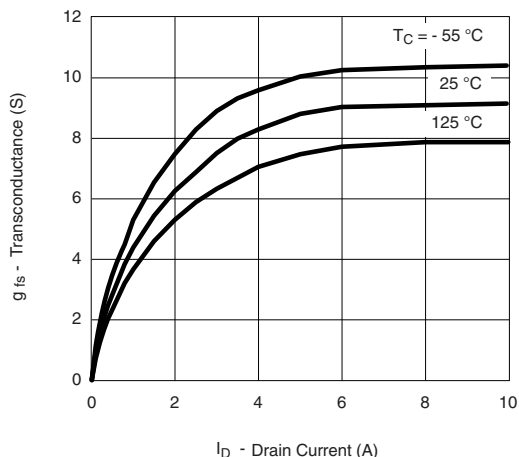
**TYPICAL CHARACTERISTICS** (25 °C, unless otherwise noted)



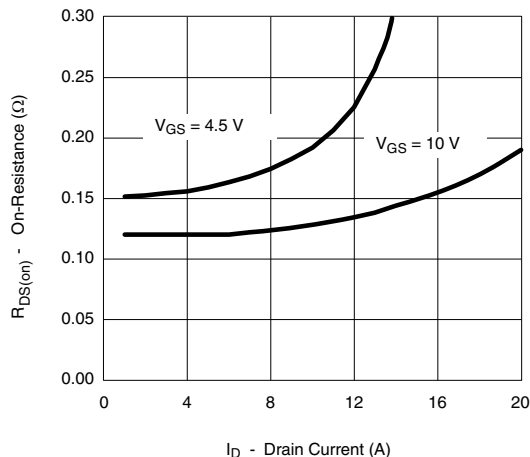
**Output Characteristics**



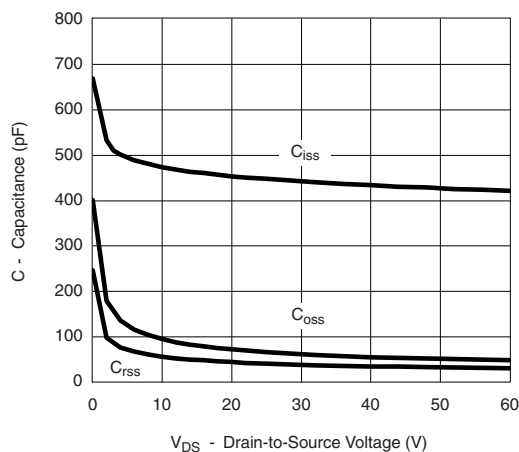
**Transfer Characteristics**



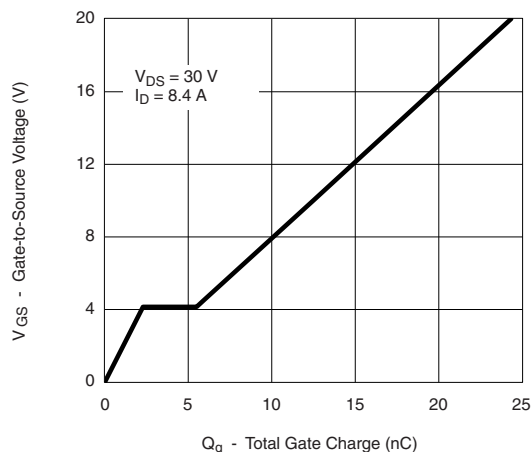
**Transconductance**



**On-Resistance vs. Drain Current**



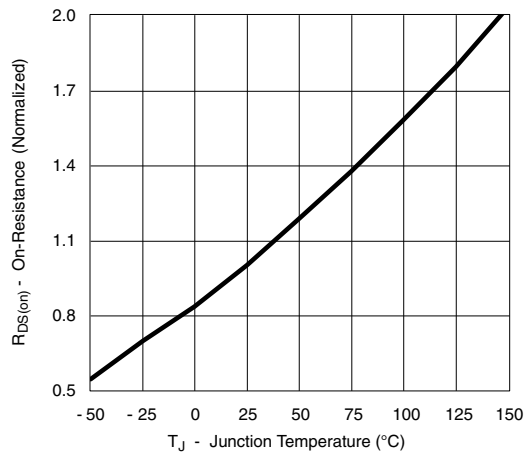
**Capacitance**



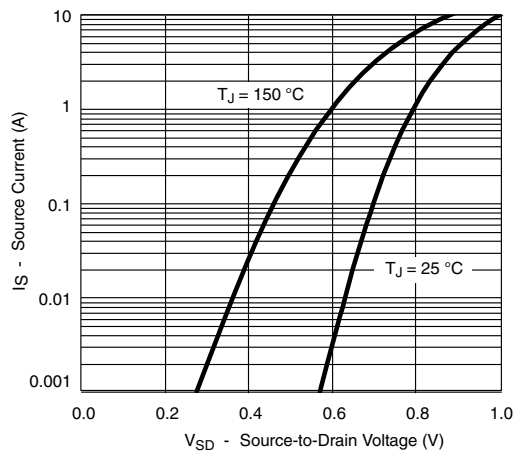
**Gate Charge**



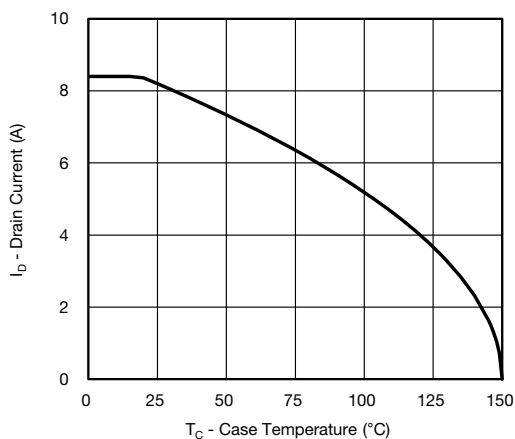
**TYPICAL CHARACTERISTICS** (25 °C, unless otherwise noted)



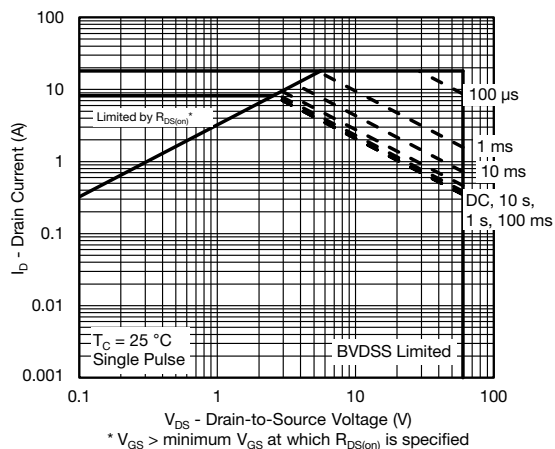
**On-Resistance vs. Junction Temperature**



**Source-Drain Diode Forward Voltage**



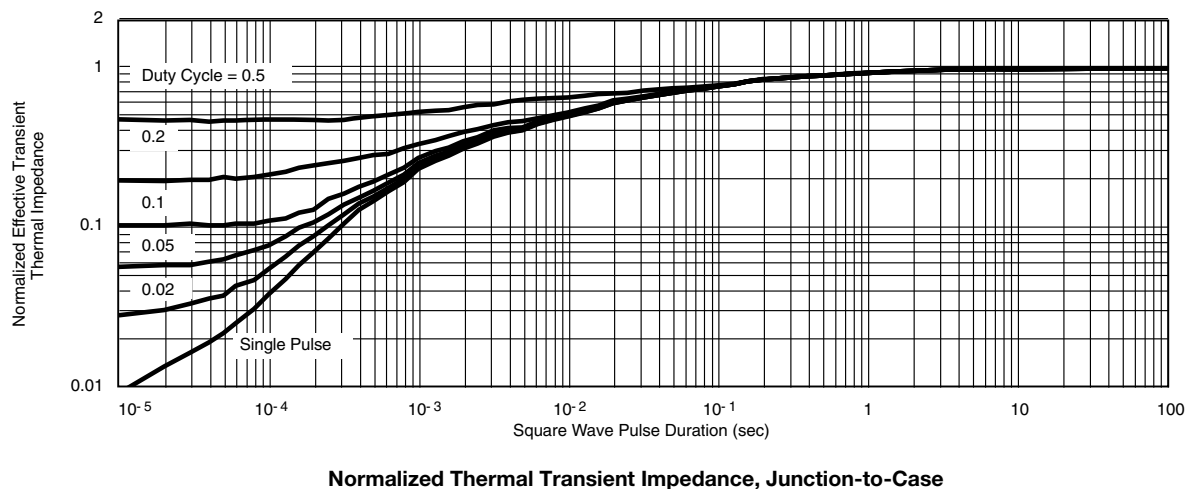
**Drain Current vs. Case Temperature**



**Safe Operating Area**



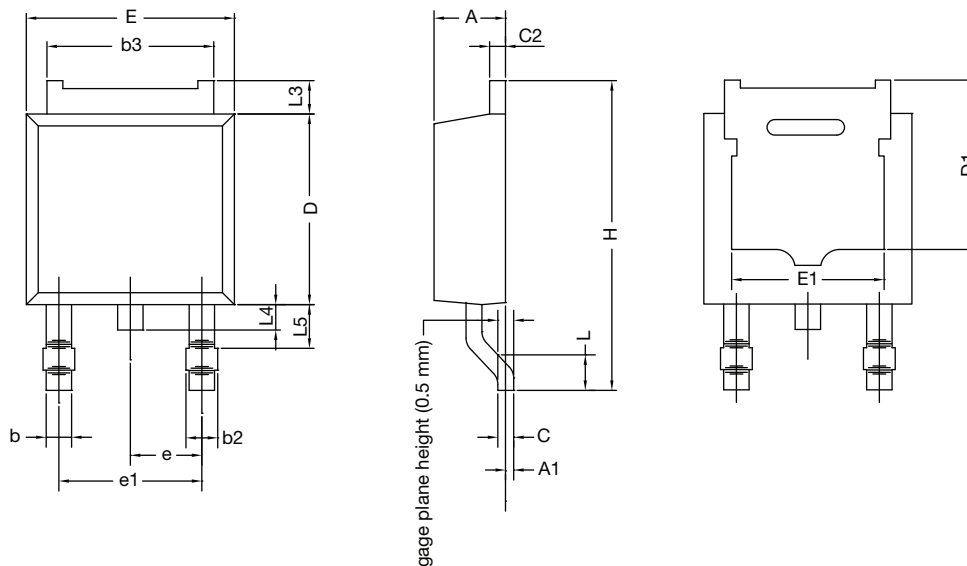
**TYPICAL CHARACTERISTICS** (25 °C, unless otherwise noted)



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## TO-252AA Case Outline

### VERSION 1: FACILITY CODE = Y



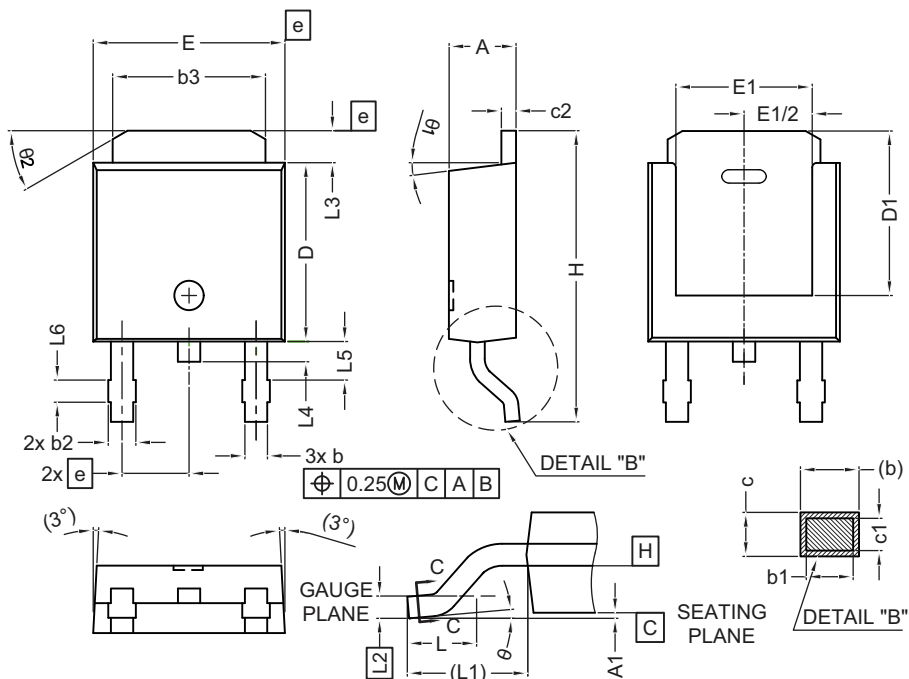
MILLIMETERS		
DIM.	MIN.	MAX.
A	2.18	2.38
A1	-	0.127
b	0.64	0.88
b2	0.76	1.14
b3	4.95	5.46
C	0.46	0.61
C2	0.46	0.89
D	5.97	6.22
D1	4.10	-
E	6.35	6.73
E1	4.32	-
H	9.40	10.41
e	2.28 BSC	
e1	4.56 BSC	
L	1.40	1.78
L3	0.89	1.27
L4	-	1.02
L5	1.01	1.52

#### Note

- Dimension L3 is for reference only



## VERSION 2: FACILITY CODE = N



DIM.	MILLIMETERS	
	MIN.	MAX.
A	2.18	2.39
A1	-	0.13
b	0.65	0.89
b1	0.64	0.79
b2	0.76	1.13
b3	4.95	5.46
c	0.46	0.61
c1	0.41	0.56
c2	0.46	0.60
D	5.97	6.22
D1	5.21	-
E	6.35	6.73
E1	4.32	-
e	2.29 BSC	
H	9.94	10.34

DIM.	MILLIMETERS	
	MIN.	MAX.
L	1.50	1.78
L1	2.74 ref.	
L2	0.51 BSC	
L3	0.89	1.27
L4	-	1.02
L5	1.14	1.49
L6	0.65	0.85
theta	0°	10°
theta1	0°	15°
theta2	25°	35°

### Notes

- Dimensioning and tolerance confirm to ASME Y14.5M-1994
- All dimensions are in millimeters. Angles are in degrees
- Heat sink side flash is max. 0.8 mm
- Radius on terminal is optional

ECN: E22-0399-Rev. R, 03-Oct-2022  
DWG: 5347

## RECOMMENDED MINIMUM PADS FOR DPAK (TO-252)



Recommended Minimum Pads  
Dimensions in Inches/(mm)

[Return to Index](#)





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