

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
60V	8.5mΩ@10V	12A
	12mΩ@4.5V	

Feature

- Split Gate Trench MOSFET technology
- Excellent package for heat dissipation
- High density cell design for low RDS(ON)

Application

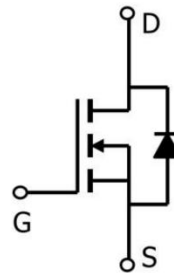
- DC-DC Converters
- Power management functions
- Industrial and Motor Drive application

Package



SOP-8

Circuit diagram



Marking



Absolute maximum ratings ($T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	12	A
Continuous Drain Current($T_A=100^\circ\text{C}$)	I_D	7.5	A
Pulsed Drain Current ¹⁾	I_{DM}	48	A
Power Dissipation ³⁾	P_D	3.1	W
Thermal Resistance from Junction to Ambient ⁴⁾	$R_{\theta JA}$	40	$^\circ\text{C}/\text{W}$
Avalanche energy ²⁾	E_{AS}	132	mJ
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-55 ~ +150	$^\circ\text{C}$

Electrical characteristics ($T_J=25^\circ\text{C}$, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu\text{A}$	60			V
Zero gate voltage drain current	I_{DSS}	$V_{DS} = 60V, V_{GS} = 0V$			1	μA
Gate-body leakage current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$			± 100	nA
Gate threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu\text{A}$	1.2	1.7	2.5	V
Drain-source on-resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 12A$		6.8	8.5	m Ω
		$V_{GS} = 4.5V, I_D = 10A$		8.3	12	
Dynamic characteristics⁵⁾						
Input Capacitance	C_{iss}	$V_{DS} = 35V, V_{GS} = 0V, f = 1\text{MHz}$		2000		pF
Output Capacitance	C_{oss}			390		
Reverse Transfer Capacitance	C_{rss}			13		
Total Gate Charge	Q_g	$V_{DS} = 30V, V_{GS} = 10V, I_D = 12A$		34		nC
Gate-Source Charge	Q_{gs}			7.8		
Gate-Drain Charge	Q_{gd}			5.2		
Turn-on delay time	$t_{d(on)}$	$V_{DD} = 30V, V_{GS} = 10V, I_D = 12A$ $R_{GEN} = 3\Omega$		10		nS
Turn-on rise time	t_r			36		
Turn-off delay time	$t_{d(off)}$			30		
Turn-off fall time	t_f			57		
Source-Drain Diode characteristics						
Body-Diode Continuous Current	I_S				12	A
Diode Forward voltage	V_{SD}	$V_{GS} = 0V, I_S = 12A$			1.3	V
Reverse Recovery Charge	Q_{rr}	$I_F = 12A, di/dt = 200A/\mu\text{s}$		36		nC
Reverse Recovery Time	t_{rr}			27		nS

Notes:

- 1) Repetitive rating; pulse width limited by max. junction temperature.
- 2) $V_{DD} = 50V, R_G = 25\Omega, L = 0.5\text{mH}, I_{AS} = 23A$.
- 3) P_D is based on max. junction temperature, using $\leq 10\text{s}$ junction-ambient thermal resistance.
- 4) The value of $R_{\theta JA}$ is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with $T_A = 25^\circ\text{C}$. The Power dissipation PDSM is based on $R_{\theta JA}$ $t \leq 10\text{s}$ and the maximum allowed junction temperature of 150°C . The value in any given application depends on the user's specific board design.
- 5) Guaranteed by design, not subject to production testing.

Typical Characteristics

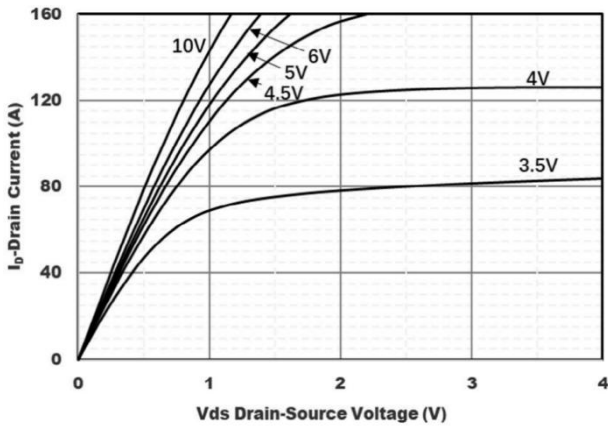


Figure1. Output Characteristics

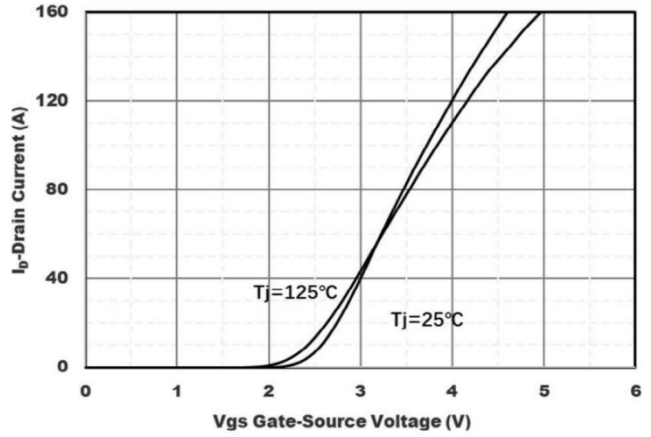


Figure2. Transfer Characteristics

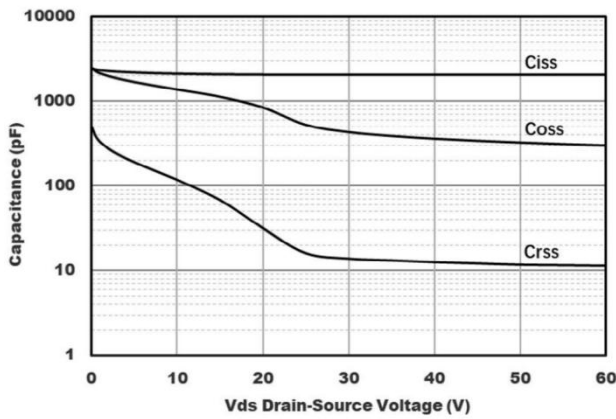


Figure3. Capacitance Characteristics

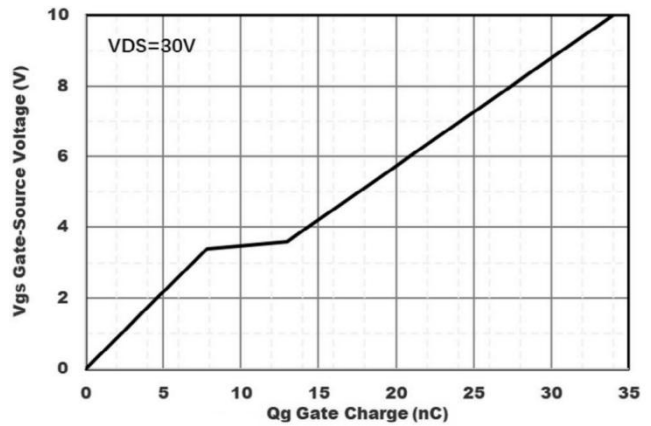


Figure4. Gate Charge

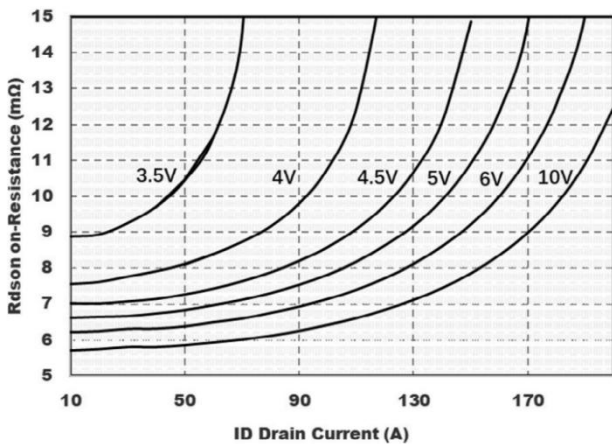


Figure5. Drain-Source on Resistance

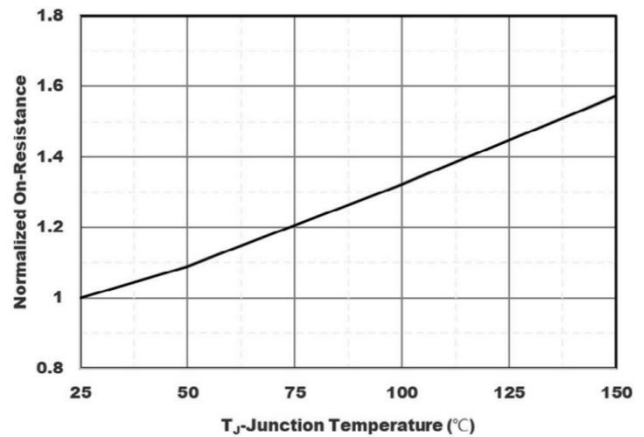


Figure6. Normalized On-Resistance

Typical Characteristics

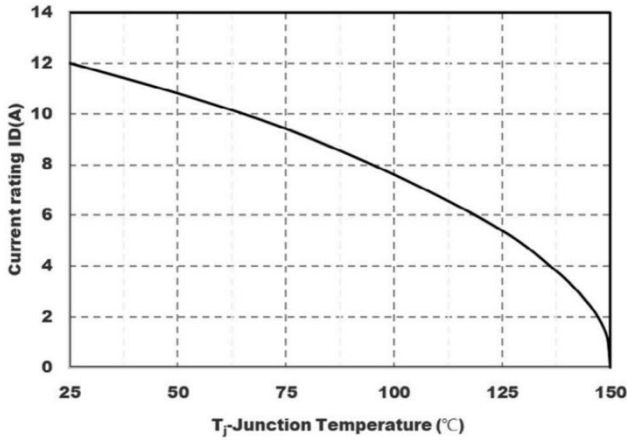


Figure7. Drain current

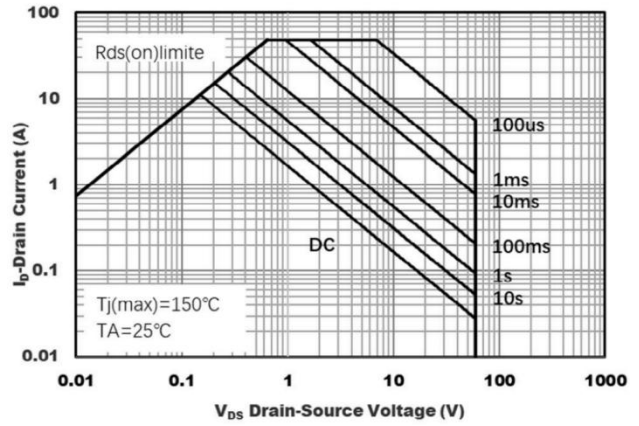


Figure8. Safe Operation Area

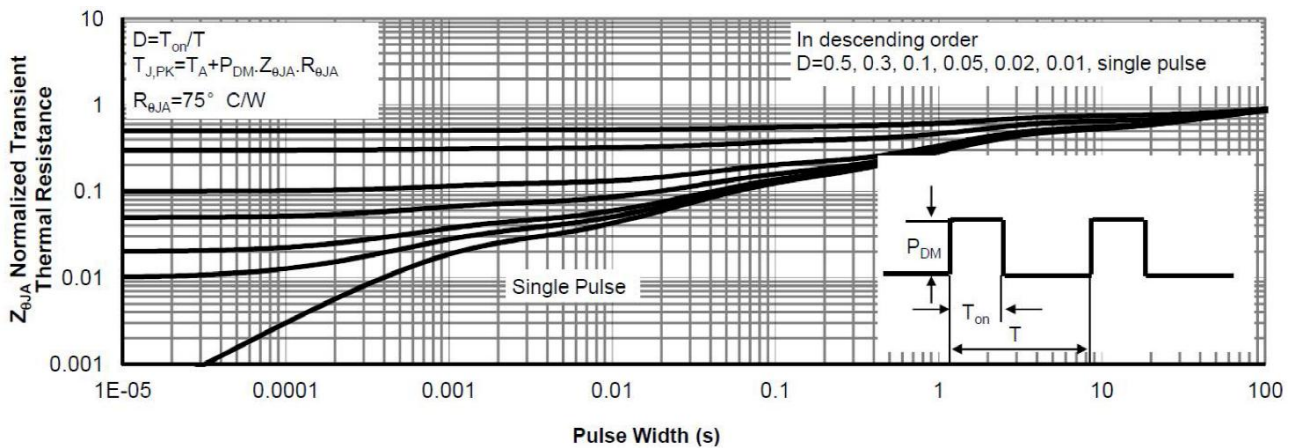
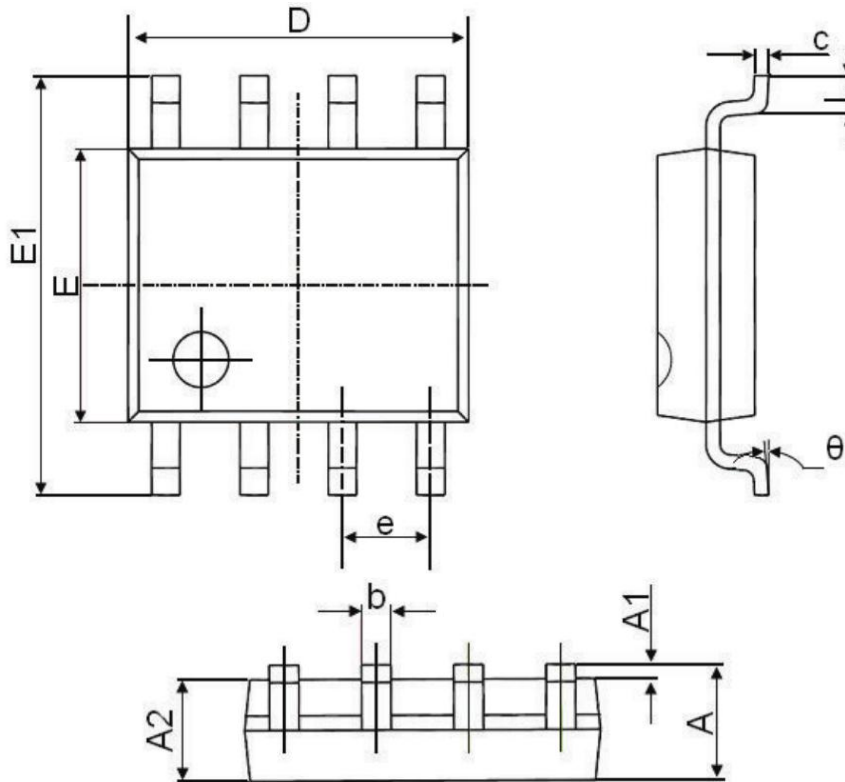


Figure9. Normalized Maximum Transient Thermal Impedance

SOP-8 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270 BSC.		0.050 BSC.	
L	0.400	1.270	0.016	0.050
theta	0°	8°	0°	8°