



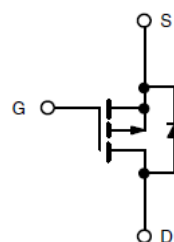
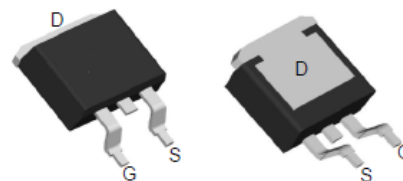
P-Channel Enhancement Mode Power MOSFET

PRIMARY CHARACTERISTICS

BV _{DSS}	R _{DS(on)} MAX	I _D
-60V	12mΩ@V _{GS} =-10V	-76A
	16mΩ@V _{GS} =-4.5V	

SCHEMATIC DIAGRAM

TO-263 PACKAGE



P-Channel MOSFET

GENERAL DESCRIPTION

- DC Motor Driver
- Synchronous Rectification in DC/DC
- AC/DC Converters

MECHANICAL DATA

- Case : Molded plastic, TO-263
- Polarity : Shown above
- Terminals :Plated terminals, solderable per MIL-STD-750, Method 2026
- Epoxy : UL94-V0 rated flame retardant

Absolute Maximum Ratings @T_A=25°C unless otherwise noted

Parameter		Symbol	Ratings	Unit
Drain-Source Voltage		V _{DSS}	-60	V
Gate-Source Voltage		V _{GSS}	±20	V
Drain Current (Continuous) *C	T _C =25°C	I _D	-76	A
	T _C =100°C		-48	
Drain Current (Pulse) *B		I _{DM}	-304	A
Power Dissipation	T _C =25°C	P _D	139	W
Operating Temperature/ Storage Temperature		T _J /T _{STG}	-55~150	°C

Thermal Resistance Ratings

Parameter		Symbol	Maximum	Unit
Maximum Junction-to-Ambient *A	t ≤10s	R _{thJA}	62.5	°C/W
Maximum Junction-to-Case (Drain) *A	Steady State	R _{thJC}	0.9	



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Electrical Characteristics @T_A=25°C unless otherwise noted

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static *D						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = -250μA	-60	--	--	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = -48V, V _{GS} = 0V	--	--	-1	μA
Gate Threshold Voltage	V _{GS(TH)}	V _{GS} = V _{DS} , I _{DS} = -250μA	-1	--	-2.5	V
Gate Leakage Current	I _{GSS}	V _{GS} = ±20V, V _{DS} = 0V	--	--	±100	nA
Drain-Source On-state Resistance	R _{DS(on)}	V _{GS} = 10V, I _D = -10A	--	9	12	mΩ
	R _{DS(on)}	V _{GS} = 4.5V, I _D = -8A	--	12	16	mΩ
Diode Forward Voltage	V _{SD}	I _{SD} = -1A , V _{GS} = 0V	--	--	1.2	V
Diode Forward Current *C	I _S	T _C = 25°C	--	--	-76	A
Switching						
Total Gate Charge	Q _g	V _{DS} = -30V, V _{GS} = -10V, I _D = -14A	--	120	--	nC
Gate-Source Charge	Q _{gs}		--	20	--	nC
Gate-Drain Charge	Q _{gd}		--	32	--	nC
Turn-on Delay Time	t _{d (on)}	V _{DD} = -30V, R _L = 30Ω I _D = -1A, V _{GEN} = -10 V, R _g = 6Ω	--	20	--	ns
Turn-on Rise Time	t _r		--	20	--	ns
Turn-off Delay Time	t _{d(off)}		--	205	--	ns
Turn-Off Fall Time	t _f		--	90	--	ns
Dynamic						
Input Capacitance	C _{iss}	V _{DS} = -30V,V _{GS} = 0V, f = 1.0MHz	--	5600	--	pF
Output Capacitance	C _{oss}		--	510	--	pF
Reverse Transfer Capacitance	C _{rss}		--	480	--	pF

A: The value of R_{θJA} is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with T_A=25°C. The value in any given application depends on the user's specific board design.

B: Repetitive rating, pulse width limited by junction temperature.

C: The current rating is based on the t_s ≤ 10s junction to ambient thermal resistance rating.

D: Pulse Test: Pulse Width ≤ 300μs, Duty Cycles ≤ 2%.



P-Channel Enhancement Mode Power MOSFET

Typical Performance Characteristics ($T_J = 25^\circ\text{C}$, unless otherwise noted)

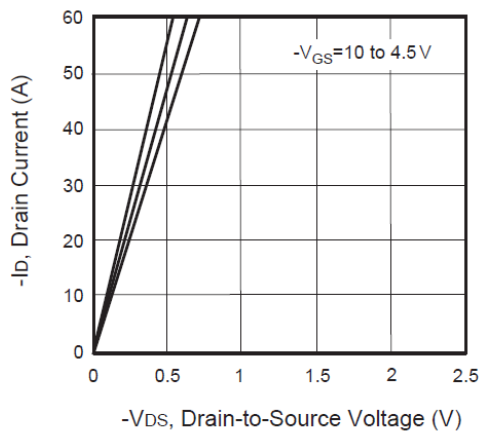


Figure 1. Output Characteristics

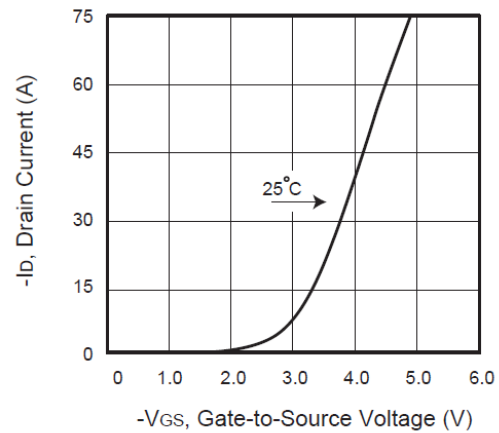


Figure 2. Transfer Characteristics

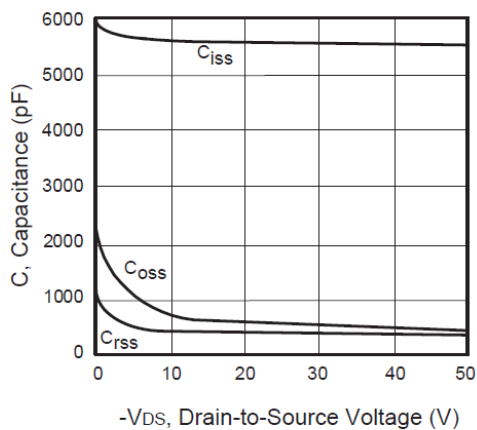


Figure 3. Capacitance

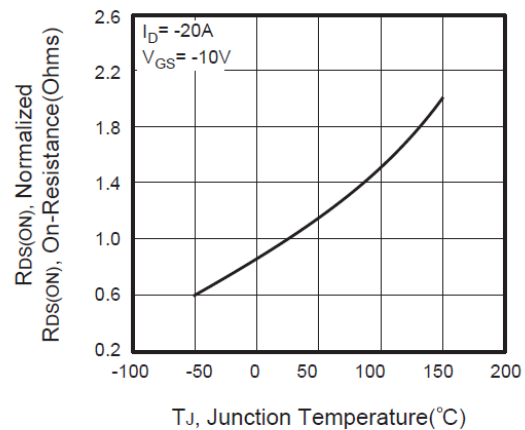


Figure 4. On-Resistance Variation with Temperature

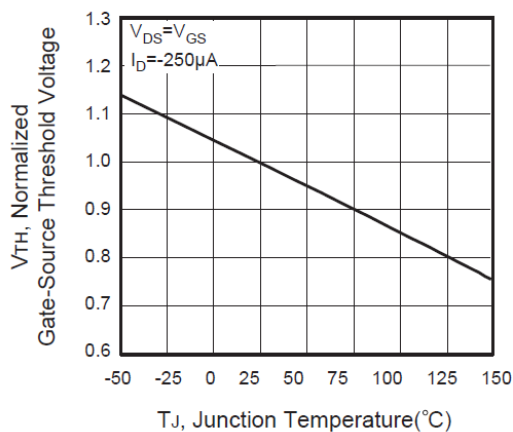


Figure 5. Gate Threshold Variation with Temperature

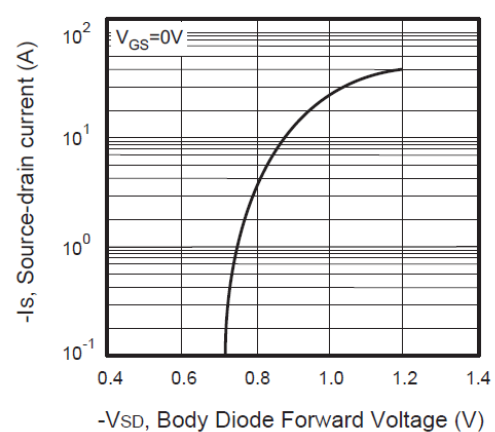


Figure 6. Body Diode Forward Voltage Variation with Source Current



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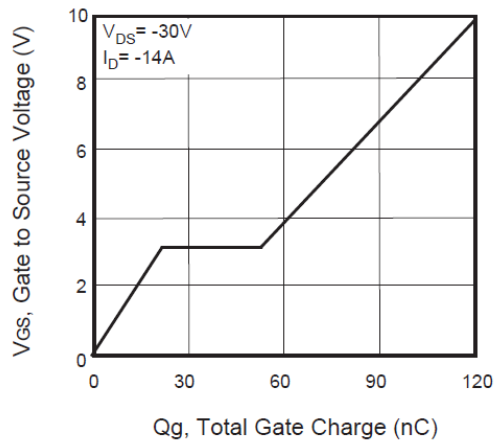


Figure 7. Gate Charge

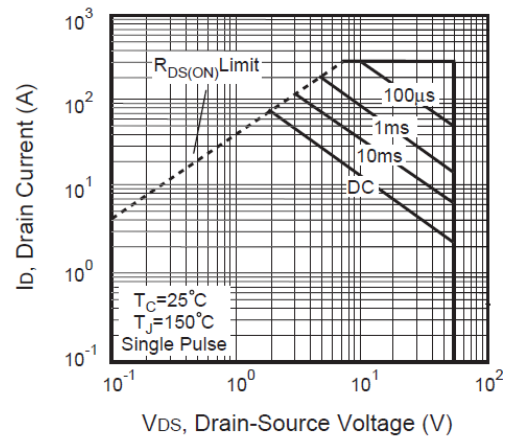


Figure 8. Maximum Safe Operating Area

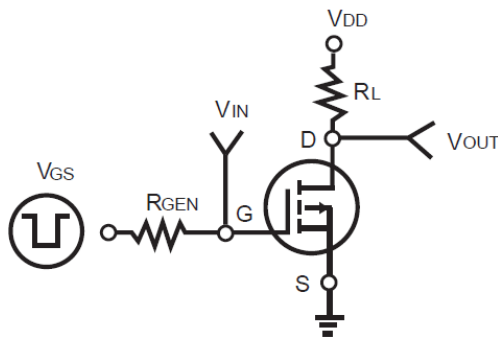


Figure 9. Switching Test Circuit

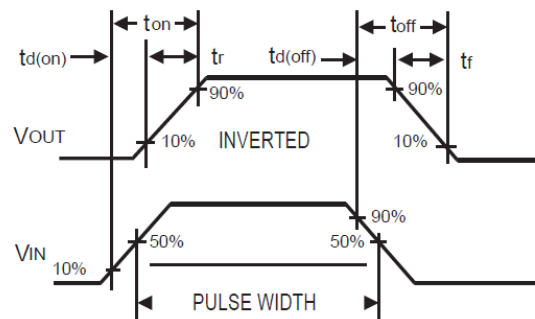


Figure 10. Switching Waveforms

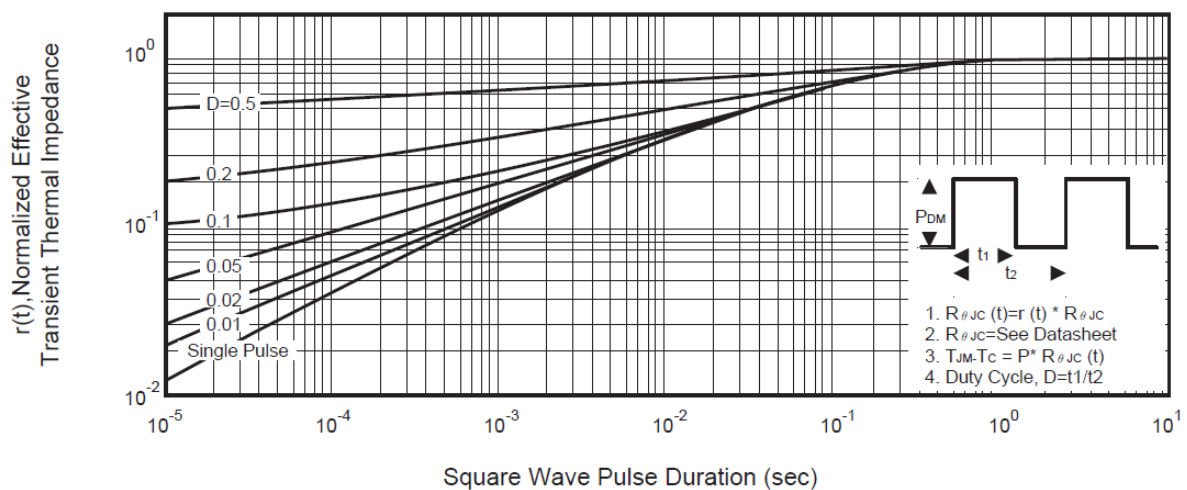
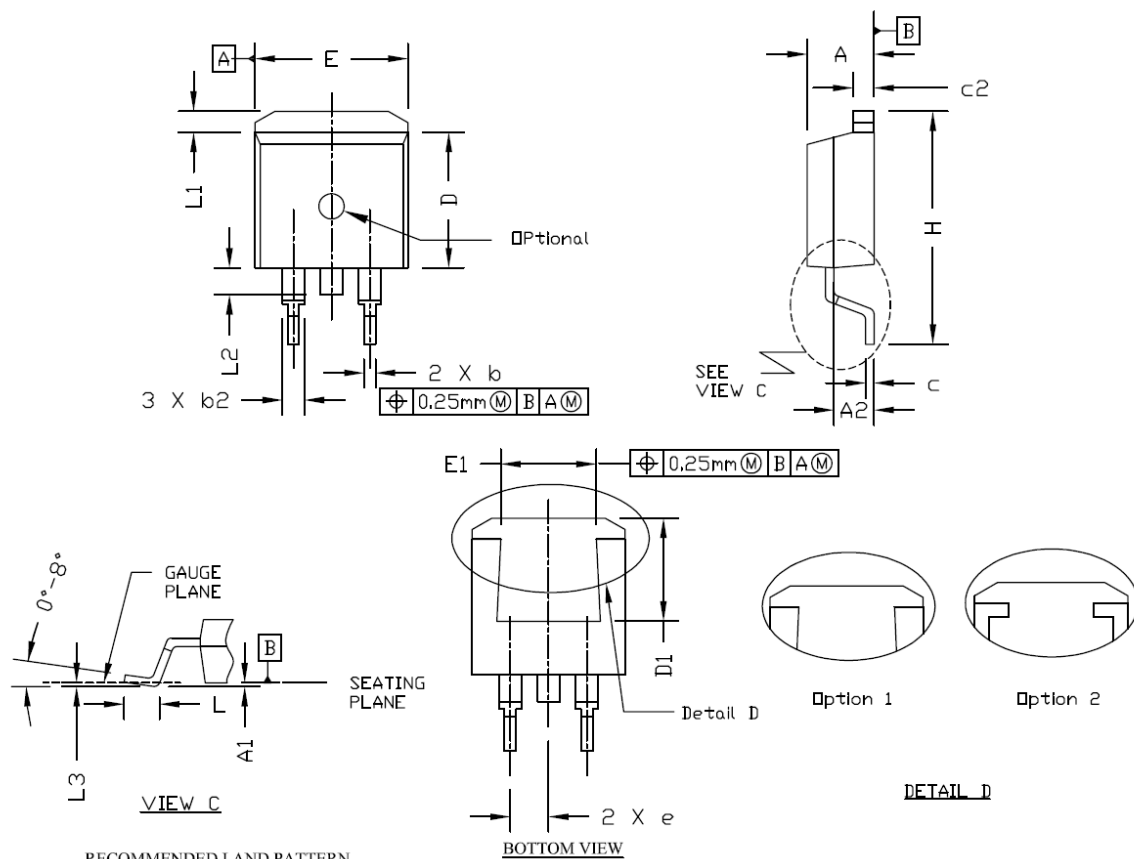


Figure 11. Normalized Thermal Transient Impedance Curve

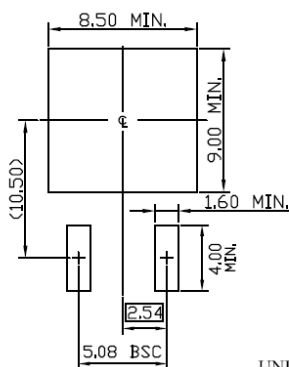


Outline Drawing

TO-263(M)



RECOMMENDED LAND PATTERN



UNIT: mm

SYMBOLS	DIMENSIONS IN MILLIMETERS			DIMENSIONS IN INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	4.064	4.45	4.826	0.160	0.175	0.190
A1	0.00	---	0.254	0.000	---	0.010
A2	2.20	2.67	2.90	0.087	0.105	0.114
b	0.508	0.81	0.991	0.020	0.032	0.039
b2	1.143	1.27	1.778	0.045	0.050	0.070
c	0.381	0.50	0.737	0.015	0.020	0.029
c2	1.143	1.27	1.651	0.045	0.050	0.065
D	8.382	9.14	9.652	0.330	0.360	0.380
D1	6.858	8.00	8.37	0.270	0.315	0.330
e	2.54 BSC			0.100 BSC.		
E	9.652	10.03	10.668	0.380	0.395	0.420
E1	6.223	8.00	8.37	0.245	0.315	0.330
H	14.605	15.24	15.875	0.575	0.600	0.625
L	1.778	2.54	2.794	0.070	0.100	0.110
L1	1.02	1.27	1.676	0.040	0.050	0.066
L2	1.27	1.52	1.778	0.50	0.60	0.070
L3	0.25 BSC			0.010 BSC.		

NOTE:

1. PACKAGE BODY SIDES EXCLUDE MOLD FLASH AND GATE BURRS.
MOLD FLASH SHOULD BE LESS THAN 6 MILS.
2. TOLERANCE 0.10 MILLIMETERS UNLESS OTHERWISE SPECIFIED.
3. DIMENSION L IS MEASURED IN GAUGE LINE.
4. CONTROLLING DIMENSION IS MILLIMETER.
CONVERTED INCH DIMENSIONS ARE NOT NECESSARILY EXACT.
5. REFER TO JEDEC TO-263 AB.

Rev. A

**Ordering Information:**

Device PN	Packing
SEU60P76-T ⁽¹⁾ H ⁽²⁾ -WS ⁽³⁾	Tape&Reel: 0.8 Kpcs/Reel

Note: (1) Packing code, Tape & Reel Packing

(2) RoHS product for packing code suffix "G" ; Halogen free product for packing code suffix "H"

(3) Willas brand abbreviation, Label Type does not display

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