

RoHS Compliant Product
A suffix of "-C" specifies halogen & lead-free

DESCRIPTION

These miniature surface mount MOSFETs utilize high cell density process. Low R_{DS(on)} assures minimal power loss and conserves energy, making this device ideal for use in power management circuitry. Typical applications are PWMDC-DC converters, power management in portable and battery-powered products such as computers, printers, battery charger, telecommunication power system, and telephones power system.

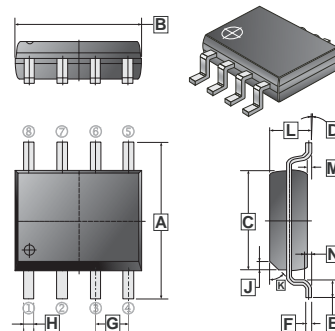
FEATURES

- Low R_{DS(on)} provides higher efficiency and extends battery life.
- Miniature SOP-8 surface mount package saves board space.
- High power and current handling capability.
- Extended V_{GS} range (±25) for battery pack applications.

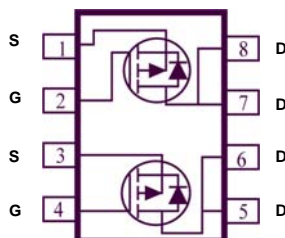
PRODUCT SUMMARY

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V _{DS} (V)	R _{DS(on)} (mΩ)	I _D (A)
-30	21@V _{GS} = -10V	-7.8
	35@V _{GS} = -4.5V	-6.0

SOP-8



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	5.80	6.20	H	0.35	0.49
B	4.80	5.00	J	0.375 REF.	
C	3.80	4.00	K	45°	
D	0°	8°	L	1.35	1.75
E	0.40	0.90	M	0.10	0.25
F	0.19	0.25	N	0.25 REF.	
G	1.27 TYP.				



MAXIMUM RATINGS (T_A = 25°C unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT	
Drain-Source Voltage	V _{DS}	-30	V	
Gate-Source Voltage	V _{GS}	±25	V	
Continuous Drain Current ^a	I _D @ T _A = 25°C	-7.8	A	
	I _D @ T _A = 70°C	-6.2	A	
Pulsed Drain Current ^b	I _{DM}	±30	A	
Continuous Source Current (Diode Conduction) ^a	I _S	-1.7	A	
Total Power Dissipation ^a	P _D @ T _A = 25°C	2.0	W	
	P _D @ T _A = 70°C	1.3	W	
Operating Junction & Storage Temperature Range	T _J , T _{STG}	-55 ~ 150	°C	
THERMAL RESISTANCE RATINGS				
Thermal Resistance Junction-ambient (Max.) ^a	t ≤ 10 sec	R _{θJA}	62.5	°C / W
	Steady State		110	°C / W

Notes

- Surface Mounted on 1" x 1" FR4 Board.
- Pulse width limited by maximum junction temperature.

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise specified)

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
STATIC						
Gate Threshold Voltage	$V_{GS(th)}$	-1	-	-3	V	$V_{DS} = V_{GS}$, $I_D = -250\mu\text{A}$
Gate-Body Leakage Current	I_{GSS}	-	-	± 100	nA	$V_{DS} = 0\text{V}$, $V_{GS} = \pm 25\text{V}$
Zero Gate Voltage Drain Current	I_{DSS}	-	-	-1	μA	$V_{DS} = -24\text{V}$, $V_{GS} = 0\text{V}$
		-	-	-5	μA	$V_{DS} = -24\text{V}$, $V_{GS} = 0\text{V}$, $T_J = 55^\circ\text{C}$
On-State Drain Current ^a	$I_{D(on)}$	-40	-	-	A	$V_{DS} = -5\text{V}$, $V_{GS} = -10\text{V}$
Drain-Source On-Resistance ^a	$R_{DS(ON)}$	-	19	21	m Ω	$V_{GS} = -10\text{V}$, $I_D = -7.8\text{A}$
		-	28	35		$V_{GS} = -4.5\text{V}$, $I_D = -6.0\text{A}$
Forward Transconductance ^a	g_{fs}	-	22	-	S	$V_{DS} = -10\text{V}$, $I_D = -7.8\text{A}$
Diode Forward Voltage	V_{SD}	-	-0.7	-1.2	V	$I_S = -1.7\text{A}$, $V_{GS} = 0\text{V}$
DYNAMIC ^b						
Total Gate Charge	Q_g	-	15	-	nC	$I_D = -7.8\text{A}$
Gate-Source Charge	Q_{gs}	-	5.2	-		$V_{DS} = -15\text{V}$
Gate-Drain Charge	Q_{gd}	-	5.8	-		$V_{GS} = -5\text{V}$
Turn-On Delay Time	$T_{d(on)}$	-	15	-	nS	$V_{DD} = -15\text{V}$
Rise Time	T_r	-	12	-		$I_D = -1\text{A}$
Turn-Off Delay Time	$T_{d(off)}$	-	62	-		$V_{GEN} = -10\text{V}$
Fall Time	T_f	-	46	-		$R_L = 6\Omega$

Notes

- a. Pulse test : $PW \leq 300\mu\text{s}$ duty cycle $\leq 2\%$.
- b. Guaranteed by design, not subject to production testing.

CHARACTERISTIC CURVES

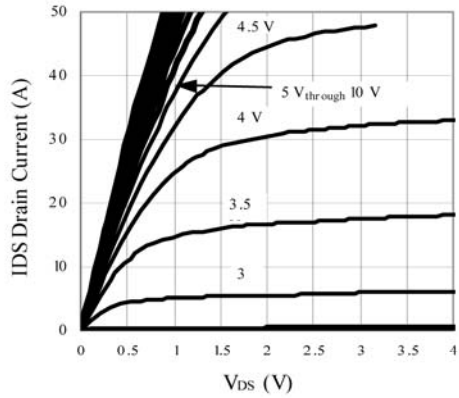


Figure 1. Output Characteristics

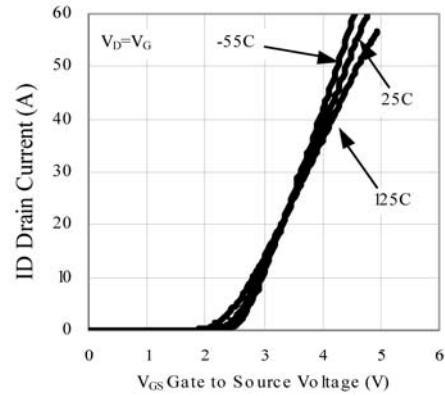


Figure 2. Transfer Characteristics

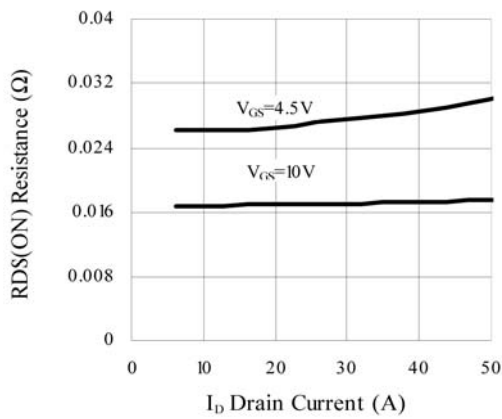


Figure 3. On-Resistance vs. Drain Current

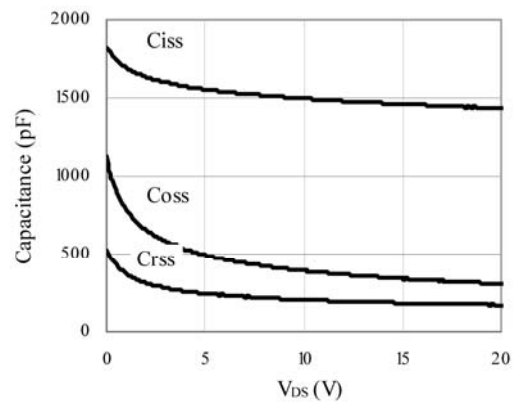


Figure 4. Capacitance

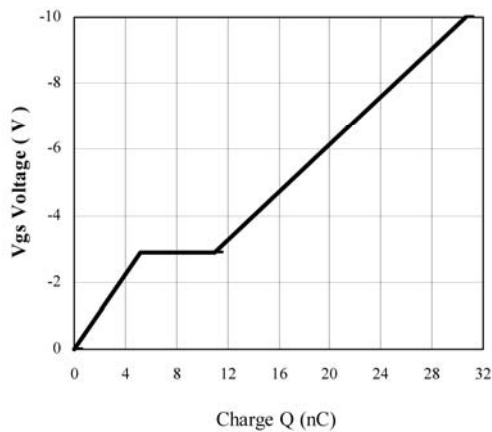


Figure 5. Gate Charge

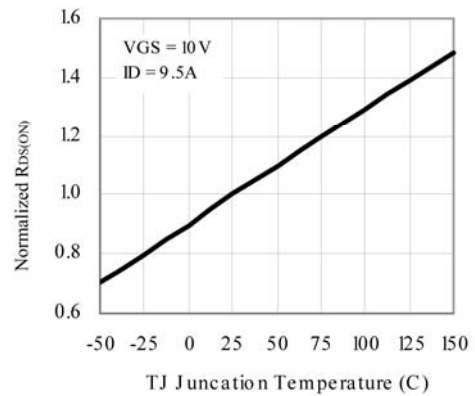


Figure 6. On-Resistance vs. Junction Temperature

CHARACTERISTIC CURVES

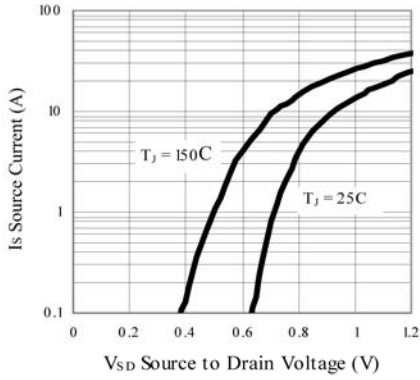


Figure 7. Source-Drain Diode Forward Voltage

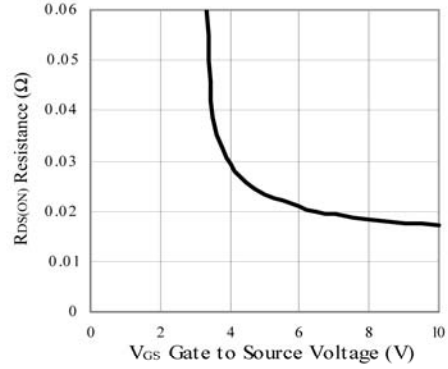


Figure 8. On-Resistance vs. Gate-to-Source Voltage

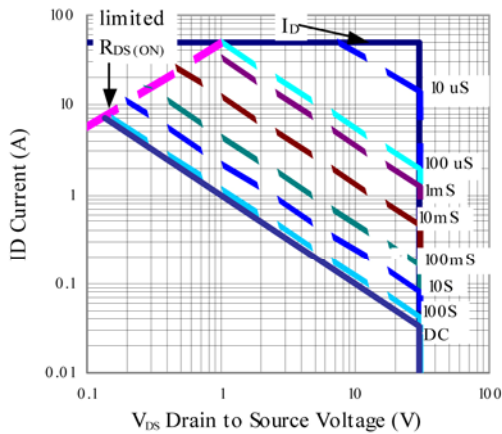


Figure 9. Maximum Safe Operating Area

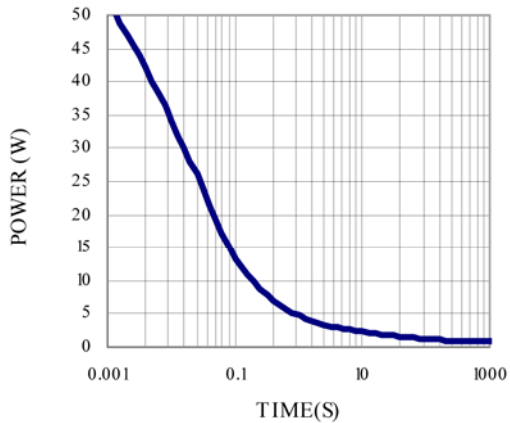


Figure 10. Single Pulse Maximum Power Dissipation

Normalized Thermal Transient Junction to Ambient

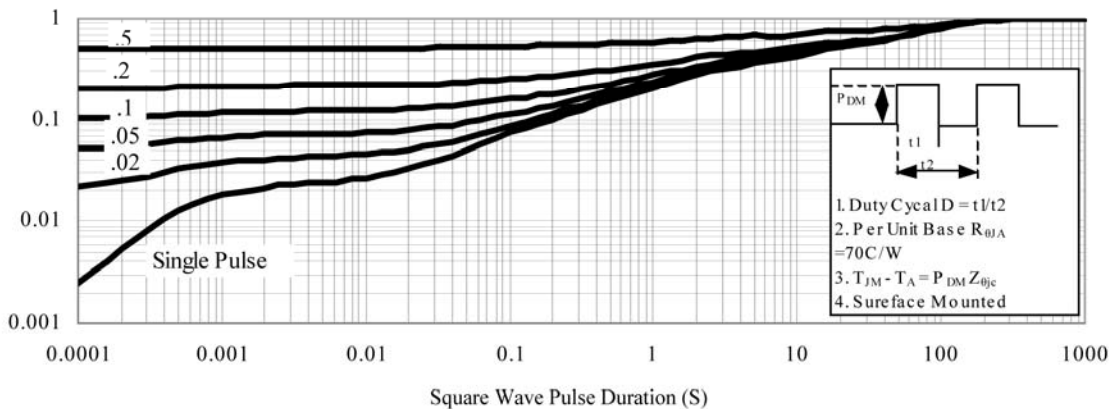


Figure 11. Transient Thermal Response Curve